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The Canadian Medical Association Journal

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Contents

	Page
ORIGINAL ARTICLES	
Presidential Address delivered before the Canadian Medical Association. By A.D.Blackader, M.D.	577
Address in Medicine. Slight variations from normal structure and function, and their clinical significance. By Theodore C. Janeway	589
The Corpus Callosum—A morphological and clinical study. By John Cameron, M.D., D.Sc., F.R.S.E.	609
Pyelitis. By J. R. Fraser, M.D.	617
Suggestions for a further Classification of cases of so-called Shell Shock. By H. P. Wright, Captain, C.A.M.C.	629
Fragilitas Ossium, with report of a case. By Alton Goldbloom, B.A., M.D.	636
CASE REPORTS	
Traumatic extra-peritoneal Rupture of the Bladder with Fracture of the Pelvis. By Max O. Klotz, M.B.	641
EDITORIAL	
The President's Address	645
The Address in Medicine	647
A Canadian Cavendish Lecturer	648
Sir William C. Macdonald	649
Editorial Notes	651
MISCELLANY	
Book Reviews	652
Obituary:—Captain Robert Home, R.A.M.C.	653
Hamilton Wright, M.D.	653
James Russell, M.D.	654
News, Provincial	655
News, Medical Colleges	656
News, Army Medical Services	657
Canadian Literature	660
MEDICAL SOCIETIES	
Medical Council of Canada. Fifth Annual Meeting.	661
Medical Library Association. Twentieth Annual Meeting.	663
Ontario Medical Association. Thirty-seventh Annual Meeting.	664
Ontario Health Officers' Association. Sixth Annual Meeting.	665
Halifax Medical Association. Annual Meeting.	668
North Waterloo Medical Association. Annual Meeting.	669
Peterborough Medical Association. Annual Meeting	669

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The Canadian
Medical Association Journal

Vol. VII. JULY, 1917 No. 7

PRESIDENTIAL ADDRESS

THE CANADIAN MEDICAL ASSOCIATION

By A. D. Blackader, M.D.

Montreal

Members of the Canadian Medical Association:

MY first duty on rising to address you this evening is to express my appreciation of the honour always involved in acting as President of this Association. The present time is for all of us one of deep anxiety with a great sense of unrest. The black and angry clouds of war have hung heavily over our country for three years and still show no signs of lightening. Many of our members are overseas striving to mitigate the horrors of this terrible conflict. Not a few have given up their lives in behalf of country, liberty, and our ideals of honour, truth and justice. It is therefore, with much doubt and some trepidation that this meeting has been attempted. Three years ago Dr. McKechnie of Vancouver was chosen as your President-elect, and that western city was selected as our place of meeting. Owing to the disturbed conditions throughout the country produced by the war, and to the fact that so many members of our profession were overseas, the committee deemed it impracticable that year to hold the meeting. The next year saw no improvement, but at the meeting of the Executive Council held last June in Toronto, it was decided that it would be unwise to let another year pass without an annual gathering. Montreal was asked to take charge of it and at a later conference, in the absence of many now overseas who might have held the position more worthily, I was asked to accept office as your President.

Delivered by the President of the Canadian Medical Association at the annual meeting at Montreal, June 14th, 1917.

An active assistance in rendering the meeting a success was promptly promised by all the officers of the Association both here and in Toronto; and to-night I desire to acknowledge how generously such assistance has been given and how greatly the success of our meeting is to be attributed to the loyal efforts of your officers and all the members of our local committees. In their name and on behalf of the profession in this city, I bid you welcome to Montreal.

The year for us is a noteworthy one. Fifty years ago, on the July 1st, 1867, Canada may be said to have reached her majority, and from the position of a group of narrow and comparatively insignificant provinces lying on the banks of a magnificent waterway, she stepped into self-conscious nationhood as a Dominion, embracing a territory which now stretches from the Atlantic to the Pacific, and containing a population which is every day becoming more self-reliant, with citizen soldiers who in this frightful war have already written their names in large letters on the page of history. We do well to meet on this semi-centenary of our nation's birth.

This year is also the semi-centenary of the formation of this Association. In the *Canada Medical Journal* for July, 1867, edited by Dr. George E. Fenwick and Dr. F. Wayland Campbell, the following notice appears announcing its inception: "A movement has been started under the auspices of the Quebec Medical Society, to establish a medical society for the Dominion of Canada. At a recent meeting it was unanimously resolved that the Quebec Medical Society recommends the calling of a convention of medical delegates from all the universities, colleges, medical societies, etc., in the Dominion of Canada, to meet in the City of Quebec on the second Wednesday of October, 1867, for the purpose of adopting some concerted action on the subject of medical legislation, and for the formation of a Canadian Medical Association."

In accordance with this resolution, on October 9th, in the Grand Hall of the University of Laval in Quebec, 148 delegates, from Louisburg in the east to Windsor in the west, gathered together under the chairmanship of Dr. Sewell, then President of the Quebec Medical Association. After some few opening remarks emphasizing the advantages both to the profession and the public to be derived from the formation of such a society, it was moved by Dr. Harding of New Brunswick, seconded by Dr. Marsden of Quebec, and carried unanimously: "That it is expedient for the medical professon of the Dominion of Canada to form a Medical Association to be called 'The Canadian Medical Association'."

Sir Charles, then the Hon. Dr. Tupper, C.B., was elected as president, Dr. Pelletier of Quebec, as vice-president, with Dr. A. G. Belleau as general secretary, and Dr. Hingston, afterwards Sir William Hingston, as local secretary for the Province of Quebec. The annual membership fee was placed at $3, and committees were appointed to frame a constitution for the Association, and also to consider and report on the following measures: the question of preliminary education; the best means to be taken to secure a uniform elevated standard of medical education throughout the Dominion of Canada; the best method of securing a uniform system of granting licenses to practise medicine, surgery, and midwifery in the Dominion of Canada; and, lastly, the best means to secure the establishment of a uniform system throughout the Dominion of Canada for the careful recording of vital statistics in association with a Department of Public Health.

Among those present are the names of all those whom we now revere as the leaders at that time of medical thought in Canada. So far as I have been able to find out, Dr. Montizambert alone of all those who appear on that register of October, 1867, is alive to-day. All the rest have joined the great majority. But in the above resolutions they have left an excellent example for us to follow, and an indication of the character of the work, which we as an association should strive to accomplish.

In selecting, therefore, a suitable subject for some remarks this evening, I decided that as this was the Jubilee year of our foundation, it would be in order briefly to review the advances which have been made along the lines originally laid down by our founders fifty years ago, and then after a discussion of what our aims as a Dominion Association should be, to call attention to the many public problems which call for consideration and action by us at the present.

Referring first to the measures considered at this gathering of the profession in Quebec, the accomplishment of which they considered to be of so much importance, we may state that the amount of preliminary education now demanded of students entering upon the study of medicine throughout the Dominion may be regarded as high and is by many considered to be sufficient. Several universities, however, with the object of fitting their students more perfectly to grapple with the deeply involved problems of disease, propose to add a preliminary collegiate year of scientific training, so that the student may enter upon his purely medical career more thoroughly equipped.

Although complete uniformity of study for the license to practise does not at present exist throughout the several provinces, it may be stated that in all the standard is high and that a certain amount of mutual reciprocity between them exists. Furthermore, it is a matter of very general satisfaction that for the past four years we have had a Dominion Medical Council, and with it the possibility of Dominion registration; a registration which enables its licenciates to practise not only throughout the whole Dominion, but also in any part of the British Empire. The achievement of this great result we owe to our Honorary President, Sir Thomas Roddick, who with indomitable perseverance and not without much personal sacrifice, secured the enactment of what is now termed the "Roddick Bill". Every member of the profession feels grateful to him for this far-reaching and most beneficent enactment, and on behalf of this Association I desire again to tender him an expression of our appreciation of the ability and zeal shown in securing its passage through Parliament, and to say that we regard it as an achievement which only he could have accomplished.

Another important object set before this gathering of fifty years ago was the establishment of a system for the complete record of vital statistics to be associated with a Department of Public Health for the whole Dominion. In this matter we can record little progress; much remains to be accomplished and final victory will require all the influence which this Association collectively and individually can exert. Premiers have promised reforms and Ministers of the Crown on public platforms have made statements, announcing that a department of public hygiene would be established in the near future on a sound and modern footing. Nevertheless, up to the present time there are no indications that steps have been taken towards a realization of these promises. We are told that there are "difficulties". In honour to the original members of this society who first applied for the measure, we of the present generation should not allow the matter to drop, but year by year should place on record an affirmation of its importance not only to our profession, but also to the general public.

An association such as ours may be considered as existing for three purposes. The first, and certainly a most important purpose, is the advancement in knowledge of the individual members by discussions on topics of medical importance, led by those who have had special study, or who have had special experience in what may be termed the "front line trenches" of medical thought. In this matter our Association has every reason to feel that it has in

the past done its duty, has accomplished much good, and deserves well of its members. Whether the meetings have taken place in the East or in the West, the Association has always presented to its attending members programmes of work which should have repaid every one for the trouble and expense involved in the act of attendance. Doubtless in the future we shall be able to offer still more interesting and extensive programmes than we have done in the past, and in this way increase our usefulness.

A second object to be attained in a society like ours is the binding together of its members by means of social intercourse, thereby ensuring a better knowledge of one another. This is of special importance in our country where long distances separate the members and clashing provincial interests may interfere with good feeling, and may even threaten the life of the Association. For this reason the entertainment side of our meetings must not be overlooked.

Members come from long distances and they should receive always a warm welcome. Every member should take pleasure in meeting old friends, especially old college chums, and in renewing acquaintance with men who in distant cities are working on allied problems. It is also not to be forgotten, that there is a very positive mental stimulus to be derived from this social contact with one another, the passing of opinions to and fro, and the quiet discussion of knotty problems. The wise man tells us that as "iron sharpeneth iron, so a man sharpeneth the countenance of his friend"; and also, "as in water face answereth to face, so the heart of man to man." I am sure that every member who has attended our meetings in the past has returned home feeling that not only has he added to his professional knowledge, but that he has also been cheered and stimulated by contact with workers in similar fields of thought.

Again, the great necessity for the profession in Canada to meet once a year and discuss the many social and economic problems which are developing rapidly and threaten to affect seriously the standing of our profession and modify its activities, is a third and very important *raison d'etre* for this Association, which should not be overlooked. This Association should be a sort of clearing-house for the exchange of opinions, and for the full discussion of all matters pertaining to the health and sanitary well-being of the community, and of the relations between the public and the profession. As individuals, physicians have always taken great interest in the improvement of social conditions, and in the

furtherance of the public weal; but collectively, our profession is inclined to be silent. Its tendency has always been to develop an attitude of cloistered retirement from public affairs, due in part to the urgent character of the work of its members, and to the incessant demands upon their time and sympathies; and, perhaps, in part also to defective training, and to the feeling prevalent in our midst of "letting the other man do the talking".

But the times are changing and our profession must wake up to the fact that powerful influences are being exerted upon it from many quarters, and if it is to have the weight and influence in the public councils that it undoubtedly ought to have, it must speak early and clearly, and give its reasons and not delay until public opinion has crystallized into legal enactments. No other society or association of physicians in our Dominion can speak so authoritatively, or so effectively as can this Association. In my opinion it is a duty which should not be shirked. But before we speak, conditions must be carefully considered. Vice-Chancellor Wesbrook, in an address delivered before the Pacific Division of the American Association for the Advancement of Science, said: "Medicine has been born, or at least reborn, in the last quarter of a century and the new science has not yet become orientated to those other forces in human environment and relationship which activate social and economic developments," and adds, "It is impossible to foretell with certainty the place of medicine to-morrow." There is much truth in these statements.

Many of the influences contributing to this changed outlook in the profession have risen within the profession itself. The great advances which have been made in our knowledge of the chief factors in the production of disease, and of the methods in which they may be combated, together with the complex problems involved in our attempts to penetrate the mysteries of infection, immunity, and anaphylaxis, are putting a new strain on the student and on the practitioner. Both the study and practice of medicine are becoming more complicated. We are raising our matriculation standards, we have lengthened the years for study. Even after graduation no single individual can keep abreast of the rapid increase of knowledge in every department, or master the technical skill demanded in each. The day of the general practitioner and of the family physician appears to be passing, and numerous specialists begin to take their place. With specialization comes the unavoidable demand for coöperation between the specialists. How this will eventually develop cannot to-day be

clearly foreseen. The necessity for team-work is now manifested in all our large hospitals. Outside of our hospitals proper, the phenomenal success which has attended the group system, as evolved by the Mayo Brothers must, we think, lead to the system being introduced in various districts and in many countries, either on the business basis of coöperation, or on what is much to be preferred, a public service basis, under the control of the various local governments. Already throughout the States, large corporations of every character, banks, railways, manufacturers, and even departmental houses, demand this group or team system in their medical service, and the general practitioner suffers. These conditions are tending to make the practice of our profession in some public appointment, with only limited activities, but with a fairly lucrative income, more attractive to our graduates than private practice, in which although the physician is nominally his own master, he has less spare time, and finds his income materially affected by the specialist on the one hand, and by the public institutional treatment of an increasing number of infectious diseases on the other. As the result of these influences on the profession, the kindly, self-sacrificing type of family physician will, I fear, gradually disappear, and with him will pass the qualities which enshrine such a man in the hearts of his patients, the keen sympathy and intimate personal knowledge; and with the disappearance of these, there may develop in the profession a tendency to descend from its high ideals and to degenerate into a mere business or trade in which mercenary gain is the chief end. Against the appearance of such a tendency let us all cry, *absit omen.*

Another important evolution contributing indirectly to change in our outlook, but acting from without the profession, is the rapidly increasing appreciation by the general public, and by the employers of labour, of the great economic value of health and of the economic loss brought about by the neglect of proper hygiene, and by the lack of fresh air and sunshine in factories and dwelling-houses.

The heads of government also are recognizing that not only is the well-being of many millions of workers involved, but also that industrial success and the development of the country are checked if due attention is not given to the many problems associated with the maintenance of health.

Provincial and municipal authorities under the flagellations of experience and science, are waking up to the necessity of securing every possible improvement in the sanitary conditions surrounding

all classes of workers, both in the workshop and in the home, and in all such health-giving improvements members of our profession should be the leaders.

Important, however, as is the securing of proper sanitation for the wage-earner, there are other problems which have to be faced, and one to which much attention has recently been given is the financial distress produced in families with small incomes by the effort to meet the strain induced by accident and sickness. It is found that in a large proportion of the families of the working-class, disease leads to distress, and distress to disease, and in this vicious circle of circumstances charity in some form has been obliged to come in and bring assistance. In the past, numerous hospitals and dispensaries have been organized throughout the country in the hope of taking off a great portion of this strain, and quite recently Dr. Cabot, of Boston, introduced a department of social service into the work of the Massachusetts General Hospital to meet the conditions which it was felt had not yet been relieved. There are many objections, however, to this mode of charity, and perhaps the most important is that it places all its beneficiaries in the position of paupers, in that all are the recipients of charity from the governors of the hospital, a charitable public, and the attending staff who give their valuable services for nothing. This cannot be regarded as an ideal condition. With our present arrangements a self-respecting man, on a small income, has either to accept this charity, or to pay high fees for special work. If he attempts the latter he at once finds himself pecuniarily straitened by hospital charges, surgeons' fees, and anæsthetists' fees, not to speak of his own physicians fees, while, in many instances, his troubles are aggravated by his temporary loss of income.

In an address recently delivered in Baltimore, Dr. J. Whitridge Williams speaking on this question said: "Ask any employee who has a family and a bare income of $2,000 a year what it cost him to have his appendix removed, or to have his wife treated for a nervous break-down, and you will have the problem clearly before you." Efforts, I know, are made in many hospitals by means of semi-private beds and coöperative clinics, to permit some modification of these expenses; nevertheless, difficulties and irregularities have appeared in almost every scheme. A more ideal plan appears to be that of an insurance under which all wage-earners on small salaries are compelled to accumulate a reserve during their period of productive activity which will at least in part defray expenses during periods of disability. Experience indicates that such in-

surance can be best carried out under governmental control, and with some governmental assistance, on what many might regard as a more or less socialistic basis.

As the result of an increasing appreciation of these facts, many countries have adopted such a scheme. Insurance of this character was first introduced into Germany by Bismarck and William I. as a means of relieving and forestalling distress. Its operation proved so successful that other states copied it, and before the war began it existed as law in many European states, and very recently with modifications was pressed upon the English profession by Lloyd George. Though it was loudly condemned at the time by many physicians as robbery, Dr. Whitridge Williams considers it a model scheme to promote the health of the community, as well as to provide in case of sickness adequate care and medical attendance for all persons in receipt of a yearly income in England of less than $800. Under its provisions, from every insured person weekly payments of 9d. are demanded, of which the State contributes 2d. while the remaining 7d. are paid by the workman and his employer in proportion varying according to the amount of wages. When these are very small the employer pays almost the entire amount, but when the wage is large, the workman pays the greater share. The insured are guaranteed medical treatment at the physician's office, in their own homes, in hospitals, or in sanatoriums, according to the necessity of the case, together with such nursing as may be essential, and all necessary medical and surgical supplies. In each community all reputable physicians are entitled to go into the scheme, and such as agree to do so, are placed on a panel, and are paid according to a fixed schedule for such services as they render. The insured may select any physician on the local panel, but must retain him for a specified time, except for good and sufficient reasons. On the other hand, the physician may refuse to accept any patient he pleases, but once having accepted him must respond to his calls until the time agreed upon has expired.

This system has been in operation too short a time to speak definitely on the merits of its details, but Dr. Williams states that so far as he has been able to ascertain, it has proved acceptable in its working to the majority of physicians, as statistics show that over nine-tenths of the general practitioners in England are enrolled on the panels, and that as a result of doing away with gratuitous services, their average professional income has shown a considerable increase. More than this, I am unable to say. I had hoped to have had some definite statistics to present at this meeting, which

would have enabled you to appreciate in greater detail the results of the measure. This I will try to do at a future opportunity. In the meantime, I take the following statements of some results obtained in Germany, from a paper read before the Massachusetts Medical Society by Dr. Edsall of Harvard. He says: "In Germany previous to 1911, although compulsory insurance had been only a few years in existence, over one hundred million of people had received benefits from it; in 1910, even before an additional income was provided by a new law, $500,000 a day was spent not only in benefits to the injured and ailing, but in constructing and maintaining hospitals and institutions for the sick and invalided, and in a variety of other ways which would tend to the improvement of public health, including even the construction of public baths, and the lending of money at a low rate of interest for the building of sanitary houses for the working classes." In Canada, thus far, very little attention has been given to a measure of this character, although, as Edsall goes on to say: "This is the most important question of legislation bearing upon medical men, that has ever come up, not only in reference to their incomes and their freedom of action, but also to the good they may do in their work, and demands their careful study, for it seems highly probable that whatever medical men may or may not wish, it will soon become an enactment in this country."

Already throughout the United States, numerous committees have been appointed by societies of all kinds to study and report on the desirability and feasibility of such compulsory state insurance. In a recent article in the *Journal of the American Medical Association*, Dr. Lambert writes: "To obtain more effective measures of caring for the sick poor and for those of small means in a community, has been the aim of the framers of the Health Insurance Bill of the American Association for Labour Legislation. Whenever compulsory insurance has gone into operation, an amount of real sickness has been disclosed that has surprised even those physicians who work among the poor. It appears that only about 50 per cent. of the total number of the sick outside of institutions are found to be under the care of physicians, and a still larger number do not receive adequate nursing care." Further on he says that "to obtain the best economic human value from employees, or to give the best economic value to employers, there must be a change in the methods by which medical service can be obtained, and a broadening of the opportunities for adequate nursing service. In any health insurance scheme intricate machinery is neces-

sary and physicians are an essential part of this machinery. The service rendered by the medical profession must be on a business and not on a charitable basis. Because charitable service has been rendered to the poor without reward in the past, is no justification for asking that physicians under a health insurance law should not be justly and adequately remunerated for efficient service."

In England the physicians paid little attention to the measure, until prospective, or in some cases actual financial pressure led them to act, and then the opposition which they raised to many of its provisions led to a widespread impression that mercenary reasons and not a just appreciation of the beneficent workings of the bill influenced their action.

Let us avoid such a possibility in Canada, and be prepared to consider the measure from every point of view, and perhaps even to further its advancement by our own action, for I feel assured that with broad and friendly consideration from the profession, the details of an insurance scheme can be arranged so as to secure entirely dignified terms for our members, and to accomplish mutual benefit for all parties. I would, therefore, urge this Association to appoint a strong committee which should include representatives from every province to give the matter their careful consideration, and to present a report upon all the important points to be considered in such a Bill, and upon the means to be taken to safeguard the true interests of our own profession. There are many other matters of public interest which demand from our Association thought and an expression of our opinion as to the best course to be taken in regard to them. To mention only a few: the compulsory notification and treatment of venereal disease; the prevention of occupational disease; the control of indecent and misleading advertisements of quack medicines, and of proprietary and patent medicines as a class. All of these demand from this Association careful discussion and definite action. It is only through free discussion in an association such as ours, that the profession in Canada can gain a proper perspective on important public problems, and develop a fair judgement on the many social evolutions to which they will undoubtedly be required to adapt their life work. There is great need in Canada for the development within our profession of leaders who, actuated only by disinterested and patriotic motives, will undertake to study the numerous social and economic questions which are certain to arise and to direct our counsels with clear judgement. We cannot solve present problems in terms of the medicine of the past, but

must strive to adapt both our theory and practice to the ever-increasing needs of humanity. We dare not stand still or stand aloof.

In conclusion, let me suggest to the Association the desirability, following the example given us at the first meeting of our Society in Quebec, of appointing committees to study and report annually on some of these important problems which face our profession, and to devote at least one whole session at every annual meeting to their discussion. Let our Association at once take its position as a society in which every member is imbued with a strong Canadian patriotism, and in which all deliberate in a broad impartial spirit over all problems whether affecting East or West, in complete coördination with our several provincial associations, and with all our country and city societies. In this way only is it possible for us to accomplish the work that lies before our profession throughout the Dominion; each province, each city, and each member developing the best that is in them for the advantage of all. The terrible strain and agony we are all now passing through will be endured in vain if each one of us does not learn the happiness, the value, and the honour involved in the act of serving one another.

MEMBERS of the Canadian Expeditionary Force to the number of 605 are at present undergoing treatment for tuberculosis. In 322 of the cases the disease developed during the period of training preparatory to going overseas.

DR. J. W. S. MCCULLOUGH of the Provincial Board of Health, Ontario, announces that on and after June 20th, 1917, facilities will be provided in the laboratories of the Provincial Board of Health at Toronto, Kingston and London for the free diagnosis of venereal diseases. Outfits for taking specimens will be supplied to all physicians for this purpose. These outfits may be procured from the laboratory of the Board, 5 Queen's Park, or from the Board's branch laboratory, Queen's University, Kingston, or the Board's branch laboratory, Ottaway Avenue and Waterloo Street, London, Ontario.

On and after this date outfits may be procured from the same laboratories for the purpose of taking specimens for the diagnosis of typhoid, diphtheria and tuberculosis. Sterilized bottles for sending water samples may also be procured from any of these laboratories.

SLIGHT VARIATIONS FROM NORMAL STRUCTURE AND FUNCTION, AND THEIR CLINICAL SIGNIFICANCE

By Theodore C. Janeway

Professor of Medicine, Johns Hopkins University; Physician-in-Chief, Johns Hopkins Hospital

In a very suggestive lecture before the Harvey Society last autumn,* Professor Haldane called attention to a point of view which he believes is creating a new physiology. Looked at from this standpoint the living animal organism is more than the sum of all its parts and is, rather, a whole which determines its parts. To quote more exactly, he said: "Physiological study, and biological study generally, seems to me to make it clear that throughout all the detail of physiological 'reaction' and anatomical 'structure' we can discern the maintenance of an articulated or organized normal." He further ventures the hope that such a new physiology may teach medicine what health really means as "the condition in which the organism is maintaining in integrity all the interconnected normals which . . . manifest themselves in both bodily structure and bodily activity". He trusts that physiology will teach how health is maintained under the ordinarily varying conditions of environment, and pathology how health tends to reassert itself under totally abnormal conditions, while pharmacology may discover how drugs can be used rationally to aid the body in the maintenance and reëstablishment of health.

This programme makes a strong appeal to me as a physician. To assist our patients in keeping well we devote a far larger portion of our time than did our fathers, and the care of the well and the cure of the sick sum up the duties of the practitioner in his private and personal relation to his patient. However, the medical man serves in many capacities beyond his fundamental and traditional relation to his patient. The maintenance of health has become a highly specialized activity of the social organization, and the discovery of the cause of disease and of methods for their preven-

* *Science*, 1916, xliv, 619.

tion are of paramount importance. In the conduct of the great enterprise of life insurance, in the selection of the fit for the service of the state in war or in such posts as require the highest physical efficiency during peace, physicians exercise a necessary function. They must pronounce judgement as to the existence of a state of health, and must protect primarily the interest of the state or the corporation, not of the individual.

Furthermore, knowledge of disease has in our day been so popularized that large sections of man, and still more of womankind, seek our advice on the least suggestion of anything wrong with their physical or mental machinery, and demand of us that we shall make the most exhaustive examinations to reassure them that each and all of their organs and functions are absolutely normal. Periodical medical examination of the apparently healthy is being enthusiastically proclaimed by sections of the medical profession as the great means for preventing chronic disease and assuring an unheard-of longevity for the whole human race. It is not my purpose here to discuss the value of such examinations nor to call attention to the lamentable disproportion between our skill in detecting chronic disease and our ability to control it. Examinations of the supposedly healthy we must each one of us make, and they will constitute, in all probability, an increasing fraction of our daily work. They demand of the physician a different attitude from that which determines his actions in the care of the sick. He must look at his patient from a new point of view. The fundamental question he must answer is not, "What is the matter with this man?" but, "Can I pronounce this man structurally and functionally normal?" If not, the second question must be put at once, "What is the clincial significance of the deviation from normal, either in structure or function, which I have detected?" The problem is therefore primarily one of prognosis, not of therapeutics, and development of prognosis as a science has lagged far behind that of diagnosis, and even behind our still halting treatment. It has been slurred over in our text-books, and very rarely given any important place in the instruction of medical students. The development of the vast armies that are to-day defending our common heritage of political ideals and institutions has made this kind of prognosis a concern of the most pressing practical importance to the medical profession and to the world. I have therefore felt that the opportunity to address you to-day, with which you have honoured me, might best be used in the very practical consideration of certain of these problems from my personal experience with them.

The vast extension of knowledge of the normal organism during recent years, while of the utmost value to the clinician, has greatly complicated his problem. Each new norm determined in the laboratory means a new possibility for variation from the normal in the patient. This has resulted in a tremendous increase in the number of recognizable disorders of function concerning the importance of which in man the physician must form a judgement. Clinical observation by the same exact methods with which the physiologist made the original discovery must then determine the limits within which variations in function are insignificant, or passing which they become dangerous, in addition to studying their causes and their remedies. Clinical medicine, therefore, takes up the task where physiology leaves it, at the frontiers of the abnormal and the solution of these problems may require years. Most of you remember clearly how the introduction of clinical methods for the measurement of the blood pressure led at first to very erroneous views of the dangers of high arterial pressure, which were only modified after patients had been observed to live with marked hypertension for ten years or more. The study of the blood pressure of the normal animal could give no clue whatever to the prognostic significance of abnormal blood pressure in man.

From still another enrichment of medical science has the work of the practitioner grown in complexity. The great refinement of diagnostic methods now makes it possible to detect the slightest deviation from the normal in many structures and functions. With the rœntgen ray and with high-powered microscopes we recognize anatomical lesions whose existence a short time ago would have remained hidden until they reached a much more advanced stage. By instrumental and chemical and serological methods, and by many specially devised exact experimental tests of function, we acquire a surprising degree of insight into, and measurement of, the slightest variations from the normal. The more elaborate the investigation, the more frequently will some abnormality be found. This is not an unmixed good. Its value depends on the correctness of the judgement formed from all the facts, and of the action based on that judgement. When Richard Bright recorded the cases which linked his name forever with chronic disease of the kidney, he did not use the refined diagnostic methods of to-day. The modern physician who tells a patient he has Bright's disease as soon as he has discovered a trace of albumin and a few hyalin casts in the urine, or a blood pressure a little above the normal, would do less harm if he had only the methods

of Bright's day at his command. I was about to say that he would be a better physician, but such a man can scarcely be a good physician, let alone a better one. The larger the number of data with which the physician must reckon, the more of experience and of common sense must he possess, if he is to form wise opinions. We can all of us, I think, recall occasions in our earlier years when some older practitioner, ignorant of the latest laboratory methods, was able from his experience to predict the favourable outcome of a case which our methods, but inexperience, led us to consider hopeless. Nevertheless, methods may and must be taught, and the progress of medicine goes hand in hand with their refinement. Experience, on the other hand, is an intimate and personal possession; only a little of it can be handed on from man to man or from generation to generation. For the most part each must acquire it laboriously for himself and largely through reflection on his mistakes. The young graduate, well trained in observation, will surely grow older and wiser if he but have opportunity.

While "knowlege comes, but wisdom lingers", we may also confidently assert with Tennyson that "the thoughts of men are widened with the process of the suns". Experience itself may not be given or bequeathed, but the results of experience may be classified and set forth and lead to the formulation of criteria for judgement and rules for practical action. This attempt, in a limited field, I shall essay to-day.

The first result of my experience which I would lay before you as an aid to wise judgement concerns the attitude of the physician toward the problem before him. To give a medical opinion is not an academic exercise. Its standards are not the standards of abstract truth, but of fidelity to fact combined with loyalty to the best interests of the patient or of the organization for which the examination is made. Utility is implicit in it. Examinations which go beyond the possibilities of useful application of the findings obtained are research, and must be conducted consciously as such, though the opportunities offered to conduct such incidental research should be embraced where possible. Apart from such research no method is so simple as to be worth employing if it can yield no valuable result for the patient, and none is too elaborate if it can save life or in the slightest degree shorten illness or point the way toward health. It is not scientific to employ every possible method of investigation in the examination of every patient, but is meddlesome, is usually dishonest in the unnecessary expense for the patient which it entails, and where thus employed, clouds, not

clarifies, the judgement. In spite of the fact that, in difficult cases, it may be necessary to have examinations by a number of specialists before determining the diagnosis and the consequent prognosis and treatment, in the end the opinion must be one opinion, given by one physician about the one patient considered as a whole, not as a catalogue of separate diseases. Department-store medicine, with all its popularity at the present day and its seeming extreme thoroughness, is not wise medicine unless it be directed by a master-mind capable of passing judgement on every one of the facts assembled, and himself capable of applying the more important of the methods of investigation employed. It can no more be successful medicine, judged by the true standards of success, which in medicine are never commercial standards, than can a department store without a guiding and organizing mind directing its policy, and familiar with the bulk of its methods, be a business success. Whether he be obscure country practitioner or renowned city consultant, no man can be a good physician who does not form his final judgement of a case with the whole human problem before him as though he himself were in the patient's place. I know of no better safeguard against inconsidered opinion, and no sounder rule by which to solve that most knotty medical problem of what constitutes telling the truth to a patient.

A second result of my experience is that the concept normal as applied in the everyday work of the physician has a high degree of relativity. Here again it is a case of whole views against partial views. This the new physiology recognizes clearly. There is no such thing as a normal composition of the urine, for the kidney is striving constantly to maintain by its secretion a normal composition of the blood which remains in the body, not of the urine which is separated from it. The older ideas of a normal urine represented merely an average composition of this secretion under reasonably constant conditions. Certain of the body's norms, such as the hydrogen-ion concentration of the blood, and its sodium chloride content, are maintained with great constancy by regulating mechanisms, and even slight variation from them entails serious disturbance. Others, like the rate of the pulse and of the respiration, have a wide variation to adapt the circulation and the excretion of carbon dioxide, to meet the widest range of functional activities. The clinician must take into account not only the facts that he observes, but the conditions under which he observes them, and, before pronouncing judgement, must frequently perform the subjective act of comparison and interpretation. Not only do func-

tions vary in activity or repose, but individuals differ from one another. There are variations as a part of the normal life-history from infancy to old age which affect structure as well. Wide differences exist between the sexes and between the different races of mankind. Every one of these factors must be weighed by the physician before he pronounces a certain finding abnormal, and again before he determines its significance in that particular patient. Examples of them I shall present shortly.

A frequent mistake with patients, and an occasional one with physicians, is the substitution of an ideal of physical perfection for the normal standard of a human being subject to the changes and chances of this mortal life. I have convinced myself at times that certain neurasthenic patients who consulted me were suffering from a consciousness of their physical inferiority, not to an ordinarily healthy person, but to this ideally perfect creature of their imagination, and that simple sensations of fatigue or discomfort which the use of the body entails on every one of us, gave rise in them to the lively apprehension of disease. I have occasionally persuaded such patients to reduce their standards of health to the practically attainable, with very beneficial results. The aspiration in Tennyson's "Two Voices",

> " That type of Perfect in his mind
> In Nature can he nowhere find,
> He sows himself on every wind"

is not a guide to the attainment of bodily health. Neither patient nor physician has a right to set up for the human body any type of perfect which can not be bound in nature. Metchnikoff has very wisely called attention to the useless and vestigeal structures and the many types of imperfection which are a part of normal man as we know him.

In the third place, the purpose for which the examination is undertaken must influence greatly the decision as to the significance of the findings. In the examination of candidates for commissions in the Army, far more rigorous tests of the functional integrity and range of adaptability of the central nervous system and of the circulation are required for the Aviation Corps than for the line, while, for the Quartermaster's Corps, a still less severe examination may suffice. Similar distinctions ought to be made among our civil patients. Health and muscular development for the mother of a large family must be gauged by different standards of normal than for a college football player. Examinations for life insurance

must reckon with the possible attempt of the candidate to deceive the examiner, and great stress be laid upon the objective evidence of disease. The existence of a heart murmur, for instance, is usually made the basis for rejection, yet, from the standpoint of the patient, many a systolic murmur is of no significance whatever, and the heart with one may be a far sounder heart than another whose disease is revealed only by subjective sensations. In dealing with apprehensive individuals, on the other hand, who need, of all things, the assurance that health is not permanently impossible for them, only the most positive evidence of important lesions or symptoms should convince one of the existence of organic disease. In the case of suspected, but unproved, tuberculosis, the social and economic status of the patient may also legitimately influence one's decision as to the significance of slight abnormalities as a guide to action. For the well-to-do, economic sacrifice based on a false alarm may often be preferable to running any chance of serious disease. With our dispensary patients, however, the opposite is more often the case; their choice would be to run great risks rather than sacrifice the means of livelihood for themselves or their families. The choice is one they have, within certain limits, the right to make. Those limits are that they make them with a sufficient knowledge of the facts reasonably to appraise the risk. Now I hold that, if the abnormalities which the physician detects on his examination are such as to raise only a suspicion of the existence of clinical tuberculosis, it is not his duty to acquaint the patient with those suspicions and give him the mental anguish which the diagnosis entails, when he knows in advance that the patient cannot afford to act upon anything but a certain diagnosis and the most urgent advice. It is his duty to follow the subsequent course of the patient and be prepared to give an unequivocal opinion and insist on action when the findings become of undoubted significance.

With these general considerations in mind, let us now turn to some of the special problems of interpretation which have arisen sufficiently often in my examination of patients to impress me with their practical importance. I shall discuss them in the order usually followed in a systematic medical examination, but I must disclaim in advance any suggestion that such an order of presentation connotes completeness of consideration. At the best, I can hope merely to touch the high lights; and, as in any such review of personal experience, the presentation will necessarily be one-sided.

First let us consider the facts which may be revealed by the

general examination of the patient. The older medicine made much of this because of its relative poverty in methods for detecting lesions of the internal organs. Constitution, habitus, diathesis, temperament, these were all-important diagnostic categories. So much that was fanciful mixed with the real differences of bodily type that the development of percussion and auscultation, and of diagnosis based on the solid facts of pathological anatomy, threw these vaguer appearances into disrepute, as it did the minute scrutiny of the tongue or observation of the pulse. Now we again appreciate that no variations from the usual external form of the body and of the proportions of its parts, in fact no recognizable objective changes of any nature, are without some significance. Since the discovery of the relation to growth and nutrition of certain of the ductless glands, especially the thyroid, the hypophysis, and the sex-glands, the study of bodily type and of physiognomy has acquired great practical interest. Every physician should familiarize himself with those external appearances which unerringly point to the existence of myxœdema or exophthalmic goitre, of acromegaly and other disturbances of the pituitary. This can only be done by acquiring visual memories of these abnormal types. This method of medical education is often neglected in our zeal for the fine analytic methods of the laboratory, but it should be fundamental in the training of every clinician. Lacking a large clinical material for the illustration of the rarer types of physiognomy, much can be learned from books. Such pictures as those in Byrom Bramwell's *Clinical Atlas*, once seen, can never be forgotten. The determination of the significance of slight variation from the normal form and facial expression may be a very difficult matter. It is first necessary to recognize the existence of features suggesting disturbance of one or the other of the ductless glands, and then to investigate the patient's family, his past and his present. There are families in which the women, as they grow older, tend toward obesity and a suggestively myxœdematous facies. Perhaps they have constitutionally less active thyroids, but for practical purposes they are not suffering from myxœdema. The story of the development, particularly in women about the time of the menopause, of a distinct change in appearance and disposition, of sensitiveness to cold, of slight mental dullness or lack of their former alertness, of unusual fatigue, taken in connexion with a suggestive facial expression, some fullness of the upper lids, a persistent wrinkling of the forehead, and unusual loss of the hair, and particularly the eyebrows, in short the finding of a number of minor symptoms and signs all explicable on the

basis of a hypothyroidism, with the exclusion of any other cause for these findings, will often lead to a brilliant diagnosis. Such cases should invariably be put to the therapeutic test. The mild myxœdema of elderly women is one of the best examples of the great value of observing very slight deviations from normal structure and function, provided the physician has visual memories with which he makes a prompt mental association.

The same holds for the recognition of many cases of hyperthyroidism, though here, more often, single symptoms point the way, either an unexplained loss of flesh or a slight tachycardia or tremor. An unusual precipitateness in such simple acts as rising or lying down in the course of examination, with an abnormally bright-eyed, staring expression, may suggest to the experienced the existence of this disease before he has asked the patient a question.

Certain other types are not so clear-cut in their significance as the two examples I have taken. It would be impossible to review them all. Some are now in process of study; others remain rather in the nebulous realm of speculation. These latter the hard-headed practitioner without special facilities for investigation had best leave alone, but the well-described abnormal types he must be familiar with and must attempt the diagnosis of in their partial forms.

The relation of certain anthropological skeletal types to resistance against disease is again being investigated. The old habitus phthisicus is one of the best known examples. This may all prove of great theoretical interest, but for the present the practitioner will base his diagnosis of the existence of pulmonary tuberculosis on the signs or symptoms of the infection itself, not on any hypothetical predisposing factor such as a long, flat chest with winged scapulæ. On the other hand, in dealing with children exhibiting any of these skeletal abnormalities which may be linked with low resistance to infection, he should do everything possible, by hygienic and corrective measures, to promote a more normal development of the bodily frame and to secure the largest possible resistance to disease. The same holds good for the slighter abnormalities of posture in children, insignificant in themselves at the time, but capable, unless corrected, of greatly reducing the mechanical efficiency of the body.

We will now pass to the examination of the cardiovascular system, the portion of the subject with which I am perhaps most familiar, and which presents numerous questions of interpretation. Our standards of what constitutes a normal heart have become

very precise in the hundred years since Laennec first created the science of physical diagnosis. I believe there is a tendency in many minds to consider these standards far more absolute than they really are. It is clear that the first requisite for pronouncing a heart normal should be the demonstration that it is of normal size. This, however, is not so simple a matter. The size of the heart cannot be mathematically fixed for all individuals, but bears a definite proportion to the size of the individual and to his degree of muscular development. In the second place, unless we use the *x*-rays to determine its size, what we actually demonstrate by our ordinary methods of examination are the position of the borders of cardiac dullness and the location of the impulse. Now the position of the heart varies strikingly. In children it is much more transverse than in adults, and the impulse lies further to the left, often beyond the nipple-line. Some persons have an almost mesially placed vertical heart; others a quite transverse one. The former is common in thin, narrow chested people; the latter in the stout, particularly those with a large corporation. All these factors must be taken into account before pronouncing a heart enlarged. Furthermore, the heart is more transverse in the recumbent than in the erect posture, and each physician should adopt one or the other as his routine in percussing the cardiac outlines. I believe it unwise to consider any heart definitely enlarged the left border of which is not beyond the nipple-line, and the right border more than 3·5 centimetres to the right of the mid-sternal line in the erect posture, 4 centimetres in the recumbent. These are outside figures for large individuals, and should be perhaps a centimetre less in small ones. In questionable cases the decision whether the size is normal or not must rest upon associated findings and always involve a subjective judgement, in addition to allowance for the errors inherent in our clinical observation.

One helpful and simple means for detecting hypertrophy of either ventricle is commonly neglected. The palpation of the apex region for the left ventricle, or of the lower sternum for the right ventricle, using the palm of the hand and applying firm pressure through the extended arm, will often reveal a definite heaving impulse, when the ordinary light palpation has given no suggestion of it. Even in the absence of cardiac enlargement a forcible, lifting impulse is definite evidence of hypertrophy of the corresponding side of the heart. The finding either of hypertrophy or of enlargement always signifies the existence of real lesions; whether these are primary and permanent lesions of the heart-

valves or the heart-wall, or are the result of high blood pressure, or of emphysema or other cause acting upon the right heart, or are temporary and curable, as in the case of the dilatation associated with marked anæmia, these points are for the rest of the examination to determine. This much may be stated definitely, that an enlarged heart is never a normal heart.

In many minds cardiac murmurs are considered the ineluctable evidence of cardiac disease. Nothing could be further from the truth, and it is of the utmost importance that the medical profession should be familiar with the frequent occurrence of certain murmurs in the absence of cardiac disease. Diastolic murmurs, whether they be aortic or mitral, may be considered as nearly certain evidence of an organic valvular lesion; diastolic murmurs at the pulmonic orifice, as pointed out by Graham Steell, are commonly due to a relative insufficiency, but, since this occurs as a sequel of advanced mitral disease, we do not reckon with it as a source of confusion. Systolic murmurs, on the other hand, belong in an absolutely different category. The recent studies of Thomas Lewis* in the Hampstead Military Hospital have made this clearer than ever. Systolic murmurs at the apex frequently develop as a result of the excitement of an examination in perfectly normal hearts, and most commonly in the young and athletic. With a few minutes of rest, and return of the heart rate to normal, such murmurs commonly disappear, and, in the absence of enlargement, are of no significance whatever. A very common accidental murmur which, in my experience, has led to a number of serious mistakes in interpretation is the systolic murmur heard in the second and third left interspaces, very loudly on forced expiration, but disappearing completely with forced inspiration. In expiration it may even be accompanied by a thrill. This murmur was always thought by my father to originate in the root of the pulmonary artery, where it lies between the aorta and the chest wall, from a slight degree of flattening during expiration. Anyone who has listened over the pulmonary artery or conus of the right ventricle of the exposed heart of the dog knows how even the slightest pressure produces a loud systolic murmur. I remember a number of instances in which this murmur was considered cause for rejection of powerful football players at the West Point Military Academy. It occurs chiefly in the young, is more easily produced

* Report upon Soldiers returned as Cases of "Disordered Action of the Heart" (D. A. H.) or "Valvular Disease of the Heart" (V. D. H.). British Medical Research Committee, Special Report Series, No. 8, 1917.

in thin or flat-chested individuals, or in those with a very large difference between the inspiratory and expiratory circumference of the chest. It may be recognized by its disappearance at the end of full inspiration, by the absence of enlargement of the right heart and of cardiac symptoms, and when recognized may be dismissed. Systolic accentuation of the respiratory murmur in the vicinity of the apex may be mistaken for a heart murmur. A little care will distinguish them. Over the left back a similar marked accentuation of the respiratory murmur synchronous with the heart-beat may occur, and be wrongly considered a transmitted mitral murmur. Systolic murmurs in the first and second right interspaces cannot so easily be dismissed from consideration. While they rarely signify aortic valve disease unless accompanied by a diastolic murmur, a thrill, or marked enfeeblement of the aortic second sound, yet they usually indicate some change in the aorta. They are common over a dilated aorta, whether from syphilis of the aorta or arteriosclerosis. They are significant only as calling attention to the need for painstaking exploration for other evidences of disease of the aortic wall. The loud systolic murmurs heard at all the orifices of the heart in severe anæmia are, I believe, usually associated with some degree of dilatation. They are the most familiar of the functional heart murmurs and the least likely to cause confusion. It should be remembered, however, that they indicate a temporary weakening of the heart-muscle and call for safeguarding treatment until blood and heart-muscle have returned to normal.

While even slight heart murmurs are usually detected, and even magnified, the important changes in the character of the first and the second sounds are apt to be overlooked. It cannot be too much emphasized that definite accentuation of the pulmonic second sound is more important evidence of serious mitral disease than is a murmur. An accentuated sound is not merely a louder sound; it is a sound of higher pitch and more ringing character. An accentuated sound may be recognized even if it be faint and distant from much overlying fat or emphysematous lung. Accentuation of the aortic second sound indicates either high blood pressure or, if this be eliminated, dilatation of the aorta. Under these circumstances it becomes an important accessory sign of syphilis of the aorta. Changes in the first sound at the apex are much more difficult of interpretation. To know the range of normal variation of the first sound in persons of different ages and different types of thorax requires long experience. In young,

thin-chested lads with overacting hearts the first sound often acquires a vibratory quality, the so-called tinnitus; this is never evidence of disease. In the elderly, the sound is commonly much lower in pitch; in them a short valvular first sound is, I believe, significant of a weakened myocardium.

The occurrence of a third heart sound in early diastole constitutes the only ausculatory abnormality heard over some dilated and failing hearts. This produces the so-called protodiastolic gallop rhythm, often so significant of the onset of myocardial insufficiency in a patient with hypertension and previously competent, hypertrophied left ventricle, as well as in cases of aortic insufficiency and mitral disease. While important evidence of pathological dilatation in such persons, Thayer* has shown that it is very common in young persons with entirely normal hearts, when examined in the recumbent or left lateral postures. This must always be borne in mind, and no special significance attached to it in the absence of enlargement of the heart.

Alterations of the cardiac rate and rhythm are now the subject of a large and increasing literature. I can only allude here to the significance of a few of the slighter variations from the normal which may be misinterpreted. The most frequent of these is that irregularity which consists in a quickening of the rate at the start of inspiration and slowing at the start of expiration. This respiratory variation in the normal sinus rhythm is common in the young, and has been called by Mackenzie "the youthful type of irregularity". I have known children to be put to bed for weeks because of this practically normal occurrence. It is much rarer in adults, but does occur, and merely signifies heightened variation in vagus tone. It is sometimes conspicuous in patients with meningitis. For the heart, it is of no moment whatever. The occurrence of occasional dropped or premature beats most of us are familiar with from our personal experience. They may accompany gross disease of the heart, especially in the elderly with hypertension or arteriosclerosis. They do signify some abnormality of irritability or stimulus formation, but of themselves they indicate nothing as to the essential integrity of the heart's structure or function as a pump. If the heart is in other respects normal, and the individual capable of normal response to effort for his years, they may be disregarded. A persistent rate above the normal, even if this be not high, calls for careful study. While it is found with slight myocardial insufficiency, it more often signifies an undiscovered

* *Arch. Int. Med.*, 1909, iv, 297.

infection usually tuberculosis, or hyperthyroidism. The latter is particularly to be suspected when the rate does not fall with rest in bed.

I wish to call particular attention to the importance of determining the response of the circulation to exercise as the best guide to the significance of cardiac abnormalities. Where patients do not complain of any cardiac symptoms, or where the examination is to determine the existence of a state of health, as in examining for the army or for life insurance, an excellent test is hopping vigourously one hundred times. If the heart rate be counted before the exercise, and then with the stethoscope after the exercise, first erect, and then after two minutes' recumbent, much information of value may be obtained. A normal heart should settle down to near its former rate after two minutes' rest in the recumbent position, even though it be considerably hurried immediately after the effort, and the breathing should do likewise. Such a test is clearly not applicable to old people.

To an entirely different category belong those cases with objectively normal hearts, who complain of substernal discomfort, oppression or pain on exertion. It is a very common mistake to consider that the normal findings on physical examination render such symptoms of no significance. I believe that quite the contrary is the case, particularly in the elderly. Any patient who, on walking a few blocks, or taking a slight hill, or hurrying a short distance, fairly regularly finds himself obliged to slow down or stand still because of a sense of tightness or weight on his chest, or a constriction in the throat, or a dull ache in his arm or wrist, or any of the other variants of the sternocardial syndrome, is suffering from anginoid attacks, no matter what the physical examination discloses. If he has a positive Wassermann reaction and some dilatation of his aortic arch, his disease is syphilis of the aorta; if not, it may be sclerosis of the aorta or of the coronary arteries, or whatever is the unknown condition underlying angina pectoris. But neither syphilis of the aorta nor coronary sclerosis is angina pectoris. It is a symptom, not a lesion; a symptom which must be recognized in most cases from the patient's story, and when recognized has an unmistakable significance. That significance is the danger of sudden death. This may never occur in the individual case. It may be deferred for many years. The symptom may even disappear under appropriate management, but, once it has occurred, the prognosis must always be qualified by the recognition of this dramatic possibility.

Turning now to the arteries, I am impressed with the failure of most physicians to recognize the natural changes which occur in them as a result of the normal activities of life. It is perfectly clear, even to the casual observer, that the arteries of the healthy adult are larger and thicker walled than those of the child. Thayer and Fabyan * have demonstrated it conclusively. Professor Adami has made you familiar with this view. To speak of every palpable radial artery in a man of fifty as evidence of arteriosclerosis is absurd. The difficulty lies in determining what degree of change in the arterial wall shall be considered pathological at any particular life-period. I think we may assume that before the fourth decade the radial arteries are never easily palpable when emptied of their blood without being pathological. In the fourth and fifth decades, some thickness of the wall is recognizable in practically every man, and considerably more in those who have done heavy physical labour. After the fifth decade, the arteries often begin to widen and elongate, showing slight tortuosity, and this tendency becomes more evident with advancing years. This is Allbutt's "decrescent arteriosclerosis". It can only be considered pathological if one considers old age and death as pathological. On the other hand, when it occurs in markedly exaggerated degree for the patient's age, it may then be spoken of as arteriosclerosis in the sense of a disease. In the very aged, extensive calcification is practically invariable, but I doubt if this should be considered unimportant in persons under eighty. Another fact not universally recognized is that this change in the accessible larger blood vessels is of very little significance for the circulation. Arteriosclerosis is dangerous only when it involves the arteries of vital organs in such a way as to compromise the circulation through them. This may happen with little or no sclerosis of the radial artery. The important circulatory areas, from this standpoint, are the cerebral, renal, and coronary vessels, and the retinal vessels, which alone may be directly inspected. With the latter exception, sclerosis of these important vascular districts must be inferred from its resultant disorders of function, not detected by anatomical evidence.

Like the arteries, the blood pressure shows a definite change in a single direction throughout life. Starting with a systolic arterial pressure below eighty in infancy, it rises during early childhood to about one hundred, by puberty to about one hundred

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* *Am. Jour. Med. Sc.*, 1907, xxxiv, 811.

and fifteen, and then throughout each decade of adult life to an average of one hundred and thirty-five at sixty. In women it is regularly somewhat lower. Individual variations carry the possible normal still further, but it is wise to assume that a pressure above one hundred and thirty-five millimetres systolic in younger men, and above one hundred and forty-five millimetres in the elderly is abnormal. This abnormality may be temporary. Should it prove permanent, the question of its significance arises. Here the measurement of the diastolic pressure assumes much importance. Slight degrees of hypertension, with the systolic pressure between one hundred and sixty and one hundred and eighty, and the diastolic pressure not above one hundred, may, I believe, be dependent upon arteriosclerosis of the aorta and larger arteries. When the pressure is higher than this, however, and especially when the diastolic pressure is one hundred and ten or over, I believe it entirely erroneous to speak of arteriosclerosis as the cause, and it should be remembered that arteriosclerosis may exist in the most extreme degree without special effect upon the blood pressure. Hypertension, especially if the diastolic pressure be raised, even in the absence of any other evidence of circulatory or renal disease, signifies that type of disease of heart, arteries and kidneys which is so common and yet for which we have no single universally accepted name. It is perhaps most in accordance with the facts, when hypertension is the sole symptom, to call it merely hypertension. Whether the end picture which will develop from it shall be that of chronic renal disease, or cerebral arteriosclerosis, or of myocardial insufficiency, is a prognosis which can rarely be made until the symptoms of advancing implication of one or the other of these organs manifest themselves. That it signifies the beginning of changes in the arterioles which will lead to one or the other of these is clear. That it may be well borne for years, in my opinion, forbids us to call it Bright's disease or chronic nephritis, any more than we would call it apoplexy, or hemiplegia, or infarction of the heart, or any other of its possible anatomical end-results.

In the examination of the lungs the important practical problem is the determination of just what variations from the normal constitute valid evidence of the existence of clinical tuberculosis. I say clinical tuberculosis advisedly. Except in young children, the recognition of infection with tuberculosis is an academic, and not a practical, problem. It cannot be too strongly insisted that the business of the physician is to determine whether a patient is ill

because of tuberculosis, or has been ill because of tuberculosis and must be safeguarded against possible future recurrence. An immense amount of time and ingenuity have been devoted to the refinement of the physical examination of the lungs by percussion and auscultation, and the recording of minute deviations from the normal. I wish to emphasize here my conviction that much of this time has been wasted. I would not for a moment be understood as advising against the careful physical exploration of the lungs. What I have in mind is the type of examination which records minute differences in the percussion note and in the character of the breath-sounds at the apices or elsewhere, without appreciation of the sharp limitations of the methods used. Differences in the thickness or the tension of the muscles on the two sides will produce definite changes in the percussion note. Breath and voice sounds are normally louder and more tubular at the right apex than the left, because of the relation of this to the trachea. Very great experience in the possible range of normal variation in different types of individual, thin and fat, young and old, with flexible or with rigid thorax, with heavy or with slight musculature, large-lunged and small-lunged, all these and many more affect the physical signs and require that the observer have in his mind, not a single normal standard, but the right standard for the particular individual selected from his memories of hundreds of varying normals. This is manifestly impossible except for the expert who has given much time to this particular problem, and he may easily be misled. Outspoken dullness, distinct local enfeeblement of otherwise normal breath-sounds, definite tubular breathing in an area where the sounds should be vesicular, localized moist râles, all of these in appropriate situations are of great significance in a patient who has any symptoms suggesting pulmonary tuberculosis. Given a quiet room, an intelligent, coöperative patient, and a reasonable proficiency in percussion and auscultation, and these should be detected with ease in fifteen minutes, or the examination is not worth continuing. In a noisy room, or with an uncoöperative patient, or without reasonable proficiency on the part of the examiner, the physical exploration of the lungs should not be attempted at all, and the diagnosis made tentatively from the much more important symptoms and corroborated at a suitable opportunity or by a suitable consultant.

Similar objections may be urged against the minute scrutiny of radiographs for the detection of pulmonary tuberculosis. The radiograph may give valuable confirmatory evidence. It can

never make anything but an anatomical diagnosis of probable tuberculous lesions, whether these are recent or very old, and whether they have anything to do with existing symptoms is a problem for the physician in consultation with the rœntgenologist. Nowhere in medicine does the myth of an ideal perfection, never found in the domain of the actual, hold such sway as in the interpretation of radiographs of the lungs. Just as many decades, and their comparison with the lesions found at thousands of autopsies, were required to determine the actual significance of all of the abnormal signs found by auscultation and percussion, so must we expect knowledge of the meaning of the slighter variations in the shadows at the roots of the lungs to be laboriously acquired. There is no other road to it, and least of all is the *a priori* assumption justified that such shadows are abnormal and necessarily indicate tuberculosis. Comparison with physical signs in clinical cases cannot solve this, because the signs are inadequate and themselves capable of misinterpretation.

The gastro-intestinal tract furnishes one of the best examples of the great range of normal variations in form and position. Our knowledge of this we owe to rœntgenology. The method of direct examination of the living and functioning stomach and intestines by the opaque bismuth or barium meal has shown how erroneous were our anatomical conceptions based on the examination of the dead subject. Here again, the relation of the form and position of an organ to the general body form is well illustrated, the so-called cow-horn stomach occurring in the stout, the fish-hook or vertical stomach in the long and thin. Rœntgenologists have learned that, while this latter type of stomach may have mechanical disadvantages, it is not abnormal, nor in itself evidence of gastroptosis in an individual of this build. Whether we shall hold this bodily configuration as significant of physical inferiority is another question, into which I shall not enter.

In the time that remains, I should like to call your attention to certain easily overlooked symptoms which have considerable significance in the diagnosis of diseases of the kidney, and to a few problems in the interpretation of slight functional impairments as revealed by special tests. For a number of years I have been impressed with the occurrence of nocturnal frequency of urination early in the course of chronic renal disease. This is no new observation, but the studies of Schlayer,* of Mosenthal† in our clinic, and

* *Deutsch Arch. f. klin. Med.*, 1911, cii, 311.
† *Arch. Int. Med.*, 1915, xvi, 733.

others, have given it a much more precise significance. One of the first evidences of impairment of renal function is a slight inability to vary the concentration of the urine. The field of response of the kidney to the ordinary diuretic stimuli, water, sodium chloride, urea, becomes limited. The expression of this which we can detect the most simply is fixation of specific gravity. Normally, this should vary throughout the day in the separate samples passed by as much as eight points, and is highest, 1018 or over, in the diminished volume of urine passed during the night, when no water is drunk. With advancing impairment of the kidney's ability to respond to the varying functional demands upon it, comes an increasing fixation of the specific gravity, and with further progress of the functional damage, fixation at a lower and lower level, that is, failure to excrete a concentrated urine. This leads to a greater uniformity in the rate of secretion throughout the twenty-four hours, and thus to an increase in the volume of the night urine, which the patient notices as the need to get up and pass urine once or more during the night. When patients do not take a large amount of fluid at bed-time, this nocturia is a most significant symptom and should lead at once to an investigation of the renal function so readily caried out by the test-meals devised by Mosenthal. The sulphonephenolphthalein test of Rowntree and Geraghty* is also very simple of application. At times one meets with patients in the earlier stages of chronic Bright's disease in whom the excretion of 'phthalein in two hours is more than 80 per cent. From this it should not be inferred that the kidneys are maximally normal. This hyperpermeability is rather an unusual early evidence of disease, the explanation of which is not quite clear. A similar phenomenon is seen in connexion with the urea excretion as studied by the Ambard's coefficient. Dr. Lewis, who came to us from your Royal Victoria Hospital for two years, and to whom I said good-bye with so much regret when he left to join the Canadian Expeditionary Force a year ago, published a very interesting series of such cases from our clinic.† In a somewhat similar way polyuria may be an expression of over-response to stimuli on the part of the renal vessels in the early stages of a chronic nephritis.

Of all the abnormalities which have been made criteria for the existence of chronic renal disease, the traditional albuminuria is the most fallacious. Not that the presence of albumin and casts is not common in renal disease of certain types, but that such

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* *Jour. Phar. and Exp. Therap.*, 1910, i, 579.

† *Arch. Int. Med.*, 1917, xix, 1.

marked albuminuria occurs without permanent lesions of the kidney in postural albuminuria and in chronic passive congestion, and because it is so commonly absent in one of the most important types of chronic Bright's disease, the so-called primary contracted kidney. For no other organ of the body does the interpretation of the significance of abnormalities of function demand the study of associated disturbances and lesions in remote organs and the combination of evidence derived from so many sources as for the kidney. It is not enough to detect abnormal constituents in the urine and an abnormal renal function, but heart and arteries, blood pressure, eye-grounds and central nervous system, must all be investigated and the prognosis based on the combined findings.

Time and a decent respect for your endurance forbid that I should allude to many other interesting aspects of the subject. Conscious as I am of the sketchy incompleteness of my presentation, I can only trust that your personal experience has already filled in the many gaps. To-day, more than ever, physicians are called on to solve concrete problems of pressing urgency. If I have shed light on the nature of any of those problems or afforded the least help in their solution, I shall be happy.

Gentlemen, I am more happy that I have been privileged to meet with you this notable year in which our two nations have united in a common cause. For more than a hundred years they have lived as good neighbours in the friendly rivalries of peace. Now we have determined to join with you in the grim but glorious comradeship of war, in defence of our common heritage and our common aspirations. The medical profession has its special stake and its peculiar part in the stuggle. When hospital ships are sunk and the Red Cross marks its wearer for destruction, then is the axe laid at the very root and motive of our art. Surely divine pity is that root, and science merely the tool with which we work. Pity without science is powerless to help, but science without pity has shown itself unbelievably potent for harm. You of the Canadian profession have borne the burden and heat of the day with a nobility to which no words of mine can pay a fitting tribute. Accept my inarticulate homage. May we not fail to meet the test, and, shoulder to shoulder with you, endure that victory of justice and mercy which alone can bring an enduring peace.

THE CORPUS CALLOSUM—A MORPHOLOGICAL AND CLINICAL STUDY

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I. *Morphological*

THE corpus callosum is a portion of the human brain which is treated in many text-books of anatomy in the briefest possible manner. The main purpose of this paper, therefore, is to demonstrate the fact that this structure is really of the greatest importance and significance, not merely from the morphological, but also from the clinical, physiological, and psychological standpoints. For example, its presence exclusively in the higher mammalia provides zoologists with a very satisfactory and effective means of dividing this, the highest class of vertebrates, into two distinct and decided sub-classes—the callosal and the a-callosal mammals. This fact alone confers upon it a position of the greatest morphological importance. This comparatively late appearance of the corpus callosum as we proceed up the vertebrate scale, is reflected in its ontogeny, for it is the last of the three commissures of the fore brain to develop in the human embryo, not manifesting itself until the fourth month of intrauterine life.

If one examines the corpus callosum of an animal belonging to the order Edentata, which is generally regarded as probably the lowest group of callosal mammals, it will be observed to be a very thin structure, so thin indeed in some instances as almost to be called membranous. If one proceeds up the group and examines the stage of evolution this structure has reached in the rabbit, which is a readily accessible representative of the group Rodentia, it will be observed on making a mesial section of the brain, which by the way is the most convenient method of studying the relative degree of development of the corpus callosum, that though only slightly better manifested than in the Edentata, it is still com-

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paratively thin. In the order Carnivora, which represent a very decided step in evolution, the growth of the corpus callosum exhibits very pronounced progress, while in the order Primates, the highest in the mammalian scale, this structure, as one would expect, reaches its greatest degree of development. The main outcome of these researches is, that in the lowest orders of callosal mammals, where the surface of the cerebral hemispheres is *smooth and free from convolutions*, the corpus callosum is *very feebly developed*, whereas in the highest orders, where the hemispheres show a progressive increase in the amount of convoluting of the grey matter, there is a *concomitant increase* in the size of the corpus callosum.

On applying the results of these investigations in comparative anatomy to the case of man, I found, as one would expect, that the more richly convoluted the brain, the greater was the degree of development of the corpus callosum. It may be noted in passing that the convoluting of the surface of the hemispheres increases the area of grey matter about three times. This constitutes a remarkable increase of surface area. It is therefore a significant fact that an individual with a large head does not necessarily possess a correspondingly high degree of intellectual development. The latter, as my researches show, seems to be mainly due to the amount of convoluting which the grey matter undergoes. It is thus possible for an individual with a relatively small head to be very brilliant mentally. Moreover it was ascertained that the corpus callosum was not large, either relatively or absolutely, in big brains that were not elaborately convoluted. On the other hand it was found to exhibit a robust degree of development in small brains that were richly convoluted. It is clear, therefore, both from the comparative anatomy of the corpus callosum in lower animals and also from an investigation of its anatomy in man, that the degree of development of this structure is essentially due to the extent of the area of grey matter possessed by the individual. This demonstrates very definitely the fact that each new area of grey matter produced during the evolutionary process has to become connected across the mesial plane through the callosal system with its fellow and possibly also with other districts as well.

The above observations are of importance when considered in association with the recorded brain weights of eminent men. On choosing names from opposite ends of the list it will be found that the brain of Cuvier, the famous French biologist, weighed 1830 grammes, while that of Hughes Bennett, a distinguished Scottish physician and physiologist, was only 1332 grammes,[1] which, it may

be noted, was decidedly below the average for the male Caucasian which Welcher gave as 1390 grammes.[2] These extreme variations in the brain weights of admittedly brilliant individuals surely confirm my statement that it is not so much a question of size as of the amount of convoluting.

My investigations also agree in many ways with the results of the recent researches of Spitzka[3] on the corpus callosum. This investigator found that the area of this commissure in sagittal section was unusually large in the brains of individuals with recognised intellectual superiority. He further declared that the size of the corpus callosum possessed a direct relationship to the degree of intellectual superiority which the individual was known to be gifted with. The recent researches of Bean,[4] however, challenge the constancy of that relationship. This observer points out that callosal systems of unusual size certainly belong to brains which possess a weight above the normal; but he goes on to show that large brains are sometimes found in individuals of average or even of inferior intellect. The results of these two investigators further serve to confirm my assertion that it is the degree of convoluting that counts and not the weight.

On looking up the literature of the subject, I was surprised to find the average thickness of the posterior end of the corpus callosum (the splenium) given as 8 m.m.[5] In the specimens examined by me this worked out at about 12 m.m., but in making such a calculation one would of course have to examine many hundreds of specimens.

II. *Effects of Absence of the Corpus Callosum*

Absence of the human corpus callosum is a very rare anomaly, as is to be expected, if one may judge from the time of appearance of this commissure in mammalian phylogeny. For example, Bruce[6] found that up to 1888 only fifteen cases of *complete* deficiency of this structure had been recorded. It was therefore with feelings of gratification that the writer in 1907 discovered a brain which exhibited a complete absence of the corpus callosum. I need not dwell here on those points in this specimen which were purely of morphological interest and were previously published elsewhere.[7] It displayed, however, several features which are worthy of being recorded in a clinical journal. For example, the sulci exhibited a remarkably simplified arrangement such as one would expect to encounter in primitive brains. The right fissure of Rolando ex-

isted in the form of its two constituent portions, as found in the fœtus. Another sign of cerebral inferiority was the relatively high degree of development of the rhinencephalon, which, as is well known becomes more and more the dominating part of the fore brain, the lower we descend the animal scale. The lateral ventricles were abnormally capacious, so much indeed as almost to suggest a hydrocephalic condition. In fact the late Sir William Turner[8] advanced this as a possible explanation of the arrest in the development of the corpus callosum. It must be recollected, however, that the fibres of the callosal system form the immediate roof for each lateral ventricle, and the absence of these fibres would of course have the effect of causing the cavities to appear more capacious than normal. As stated in my paper "the increased capacity, from this point of view, is thus, partly at least, the result of a general deficiency of the corpus callosum; though this conclusion does not entirely put out of court the possible existence of a concomitant hydrocephalic condition".

The importance of the corpus callosum as an essential functioning constituent of the human brain is shown by the fact that its absence is associated with signs of grave mental deficiency in the individual. Some of the cases of partial absence did not exhibit any very serious departure from the normal though they were classed by their acquaintances as "queer", a very unscientific description which does not help us much. So far as one can gather from the recorded cases of complete absence of the corpus callosum, the clinical features, where known, did not conform to any special clinical type of insanity, but represented rather a condition of general feeble-mindedness. Of course one would argue from the physiological standpoint that in absence of this commissure the chief loss would be a lack of coördination between the two halves of the brain, which must have produced a remarkable train of symptoms in the individual. So far as I can ascertain, no elaborate account of the clinical history of these cases has been published. I would like to prophesy that such a contribution would form a valuable addition to our knowledge of some of the obscure problems of neurology.. I would therefore urge the necessity of making post-mortem examinations in our lunatic asylums on all obscure cases of dementia, paying particular attention to the condition of the corpus callosum, as it is possible that absence, or at any rate deficiency of this structure, occurs more frequently than is generally recognized.

III. Clinical Considerations

Apparently a great deal of dubiety still exists as to the exact extent and scope of the functions of the corpus callosum. Thus Dana[9] states that it is "the great commissural tract connecting the two cerebral hemispheres and their respective centres", though he qualifies this assertion somewhat by the statement that those centres of each hemisphere "for receiving visual impressions are almost independent, and the centres for the memories, which are still more highly specialized, are practically entirely independent. We infer that the higher mental functions, therefore, work either in one hemisphere or in the other, and that the two halves of the brain do not coöperate with each other in much of the higher intellectual work." It is interesting to compare this statement with the opinion of Bastian[10] who remarks that "the more specialized emotional, intellectual, and volitional regions in each hemisphere, wherever they may be, and however they may be related to one another, are necessarily, by means of the 'association system' of fibres, brought into intimate communion with their corresponding sensorial regions of various kinds. It is in this way, therefore, that the higher functional regions of the two hemispheres may be brought into relation with one another through the medium of the fibres of the corpus callosum. There is manifestly a unity in our sensorial consciousness, that is, in the 'derivative', as well as in the 'primary' mental processes." It is clear that the opinions of these two authorities are diametrically opposed to one another and require some elucidation. It seemed to me that much of this could be secured from the anatomical standpoint, by making a simultaneous dissection of the white matter of each hemisphere. I accordingly decided to strip away the white matter from above downwards layer by layer. This will be found to be a successful method in formalin hardened brains, in which the centrum ovale can be readily split off in layers.[11] Each layer or strip must be pulled away gently by dissecting forceps. The various bundles of fibres exposed on each torn surface stand out like fluted columns, a fact which permits of their being readily traced to the area of grey matter from which they arise. After much labour it was ascertained that every district of grey matter sent its quota of fibres into the callosal system, and these in due course found their way across the middle line to the opposite hemisphere. I was particularly impressed by the prominence of the bundles of fibres which swept across between the frontal regions of the hemispheres in

the genu (forming the forceps anterior of the corpus callosum), and also by the closely packed arrangement of the fibres passing between the two occipital poles in the splenium (forming the forceps posterior). The splenium and the genu, it may be noted, constitute the thickest portions of the corpus callosum. It is thus significant to observe that the higher intellectual centres of the frontal lobes and the visual centres of the occipital lobes are concented with one another across the mesial plane in the most elaborate and, indeed, lavish manner possible. It is therefore clear that the results of these researches are definitely antagonistic to Dana's views and on the other hand confirm Bastian's opinion.

The corpus callosum has an important bearing on the subject of apraxia,[12] for it has been definitely shown that a lesion affecting this structure causes at least one form of that interesting condition. The problems involved in apraxia have not yet been fully elucidated; but the chief manifestation is a failure to coördinate the movements of the extremities, especially the hands, in the production of a definite ordered movement, which demands the conjoint use of both, as in the bimanual manipulation of a utensil or implement. For example[13] apraxia of the left hand, may be observed even when its sensori-motor area in the right hemisphere is absolutely intact. This puzzling condition is sometimes found to be due to its connexion with the corresponding centre in the left hemisphere having been severed by a lesion in the corpus callosum. This interesting and significant fact shows that the left sensori-motor centres in a right handed individual possess or exercise a functional superiority or supervision over the corresponding ones of the right hemisphere through the callosal system of intercommunicating fibres. This fact has probably been responsible for the prevalence of the idea that the "speech centre" is located entirely in the left hemisphere in a right handed person. I therefore am convinced that the doctrine of incoördinate simultaneous innervation can also be applied to the speech function. One certainly ought never to lose sight of the fact that the left halves of the tongue, mouth, soft palate, fauces, pharynx, and larynx, which are all implicated in the production of voice and speech are innervated from the right hemisphere. The commissural fibres of the callosal system that connect the "speech centre" of Broca with the corresponding area of grey matter in the right hemisphere will be found on careful dissection to be as strongly developed as the bundles connecting other areas. One ought therefore to describe "speech centres" in both hemispheres, with a system of callosal

commissural fibres connecting these together in the most intimate manner possible, and apparently exercising some control by the left centres over the right in a right handed person. I am glad to see in the writing of some of the younger neurologists expressions of dissatisfaction with the localization of the speech centre exclusively in one hemisphere, as this unilateral arrangement has clearly failed to explain many obscure clinical phenomena associated with disorders of speech. For example, Marie,[14] as the result of extensive investigations on the subject, has made the startling declaration that Broca's convolution is not associated with the speech function at all. Moreover, he further asserts that in true aphasia a general impairment of the intellectual functions is invariably present. Marie considers, and I think rightly, that the idea of intellectual impairment ought never to be lost sight of, as possibly influencing or even dominating the aphasic condition.

Monakow's[15] conclusions on the subject of aphasia are likewise of great significance. This investigator also questions the localization of the speech centre in Broca's convolution, and considers that aphasia is due rather to a loss of continuity—a *diaschisis* as he terms it—between the various centres that control the speech mechanism. The coördinated action of these centres in the two hemispheres can, I take it, only be brought about by the efficiency of the callosal system of projection fibres. The results of these two investigators are certainly pregnant with suggestiveness, and will, I venture to remark, revolutionize our present day ideas regarding the anatomy and physiology of the language mechanism. I have attempted to come to the rescue, as it were, from the purely anatomical standpoint, in the hope that it may assist in clearing up some of these obscure clinical manifestations.

The corpus callosum is generally treated with scant courtesy in text-books of anatomy. One object, therefore, of this paper is to vindicate the position of this commissure as a highly important unit of the human cerebral organization. Another object, and that by no means the least important, in publishing this paper in a clinical journal, is to advance a plea in favour of closer coöperation between the clinician and the anatomist in the attempt to elucidate obscure problems that are encountered in daily medical and surgical practice.

References:

1. These weights are given in Doctor Charlton Bastian's book—"The Brain as an Organ of Mind."
2. In a recent paper Bean gives this as 1341 grammes. *Amer. Jour. of Anatomy*, Vol. IV.
3. *Amer. Jour. of Anatomy*, vol. iv.
4. *Amer. Jour. of Anatomy*, vol. v.
5. Piersol's "Anatomy," p. 1155.
6. *Proc. Roy. Soc. Edin.*, vol. xv. Also in *Brain*, vol. xii.
7. *Jour. of Anat. and Physiol.*, vol. xli.
8. *Jour. of Anat. and Physiol.*, vol. xii.
9. "Diseases of the Nervous System," 4th Ed., p. 373. This is the latest edition I have been able to gain access to. It is possible that the author may have considerably altered his views in a later edition.
10. "The Brain as an Organ of Mind," p. 485.
11. At the International Congress of Anatomy at Geneva, in 1905, Doctor E. B. Jamieson exhibited a beautiful series of dissections of the brain carried out in this manner.
12. This subject will be found discussed in Bing's "Compendium of Regional Diagnosis in Affections of the Brain and Spinal Cord," p. 200.
13. This of course has reference to a right handed individual. Apraxia of the right hand would under similar circumstances be the condition in a left handed person.
14. *La Semaine Médicale*, May 23rd, October 17th, and November 28th, 1906.
15. *Neurologisches Centralblatt*, November 16th, 1906.

THE Mount Hamilton Hospital was opened officially on Saturday afternoon, May 19th, by His Excellency the Governor General, who was accompanied by Lady Maude Cavendish. It is the intention that, eventually, the hospital shall comprise ten units, but at present one only—the medical building—has been completed. A beautiful site on the Hamilton Mountain was wisely chosen for the hospital and nothing has been forgotten in its equipment, which is of the latest design. The building itself is of rough texture brick and reinforced concrete and, of course, is fire proof throughout; the water supply is pumped through the building by electricity, the nurses call system is silent and the illumination both direct and indirect. Dr. Langrill, the medical superintendent, and those who have worked with him so faithfully are to be congratulated upon the results achieved.

PYELITIS

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PYELITIS is coming to be recognized as an important disease, *sui generis*, and to be accorded its place as a definite entity. This is borne out clearly by tracing its history through the literature of kidney diseases for the past ten years.

It had long been known as a secondary process associated with renal calculi, tuberculosis, or following instrumentation, but it remained for Reblavd, Lohlein, Olshavsen and Rosving to place it before us on a definite clinical basis as an independent lesion.

Lindeman, in 1913, in the *Deutsche Zeitschrift für Chirurgie* in a masterly exposition of the subject pointed out clearly how deficient our knowledge is, of the varying and more or less changing symptoms in the acute and chronic inflammations of the pelvis of the kidney; and, therefore, how difficult is their diagnosis. He also emphasized the great difference in the valuations placed on the various therapeutic measures; whereas in a certain group of cases the drink cures together with urinary antiseptics would yield good results, in another series these measures would fail. Likewise a series treated by topical applications to seat of disease would yield very unequal results.

Just these contradictory features have attracted many workers to this field and have prompted many researches. And even though our knowledge has already advanced by tremendous strides it is far from settled and complete.

In the majority of cases we are dealing with an infection by the bacilli coli or members of its group and only in a few instances, other organisms of pathogenic or non-pathogenic nature have been found. Lindeman, in a large series, finds bacillus coli in 81 per cent. of cases; the remaining 19 per cent. showing staphylococcus, streptcoccus, bacillus proteus, pneumococcus, bacillus typhosus, or gonococcus. In our own experience the colon bacillus was the infecting organism in 90 per cent. of cases.

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Accordingly this brings us to consider briefly the sources from which these organisms come. About this subject controversy has been active for years and is yet unsettled. Infection is commonly regarded as occurring in one of three ways: i.e., from the blood stream, the hæmatogenous or descending route; secondly, by the lymph channels from the large bowel; or, thirdly, by the so-called ascending infection, that is by means of the ureter.

At the outset it may be well to point out that the bacillus coli is a constant inhabitant of the body, and enters sometimes through the healthy skin or by way of mouth, nose, anus, vulva or urethra and that its presence can be demonstrated in the ramifications of respiratory digestive or urogenital systems, at times without any apparent inflammation. It seems probable that even in health, it may enter, in small numbers, these organs, when they are apparently unchanged, and that it may pass from the bowel into the mesenteric glands, liver, spleen, or kidney; and that it filters through the kidney and may appear in the urine. We are also aware that bacillus coli under suitable conditions may cause pathological lesions such as urethritis, cystitis, vesiculitis, orchitis, epididymitis, puerpural fever, endometritis, salpingitis, cholecystitis, peritonitis, and bony infections, and thus realize the possibilities of metastatic infection.

At this time it would not be advisable or possible to delve deeply into the controversial side of the subject, but from a clinical standpoint it might be well to state some of the chief evidence relating to these matters. In the early days, Rosving and his school adhered strongly to the hæmatogeneous or descending method of infection, insisting that cystitis and colipyelitis originated entirely by the blood routes. Since then these views have been modified and both the hæmatogenous and ascending modes of infection have been given credence.

We are all agreed that much clinical and experimental data are at hand to enhance the views of ascending infection either by way of the ureteric canal or by the lymphatics which surround it. For instance Guyon, Lewin and Goldschmidt have shown that excessive vesical pressure releases temporarily the valvular closure of the ureter at its entrance into the bladder, making it possible for the bladder contents to regurgitate into the ureter. They may then be carried by antiperistalsis to the kidney.

Such conditions are produced by tumours and enlarged prostates, stones, strictures and also by strong bladder irrigations such as with strong silver nitrate as practised in gonorrhœal infections.

What happens is that marked bladder tenesmus results after silver lavage, the bladder contracts repeatedly and its contents are forced into the ureter and so, possibly, on to the bladder. In women moveable kidneys, abnormal courses of the ureter, with parametric adhesions, lead to kinking and twisting of ureters and urinary stasis and decomposition, leading to infection. But here the question as to whether we are dealing with an ascending infection or hæmatogenous infection of stagnant urine is difficult to decide.

Eisendrath and Schultz, of Chicago, have recently published a very interesting study supporting the "ascending infection and point out that there is a very close lymphatic network in the wall of bladder and ureter, communicating above with a similar one about the pelvis and parenchyma. At its lower end connexions with pelvic viscera are clearly demonstrable. Experimental and clinical evidence indicate that almost complete obstruction to free passage of urine is necessary for ascent of infection by lumen of ureter. Experimentally, it may be shown that infection set up by simple introduction of bacteria into the bladder without injury obstruction may pass by up means of mural lymphatics of ureter, and he concludes by saying that in pyelitis and pyelonephritis in the human, second to the bladder the lymphatics constitute the most important course of upward travel especially where there is no urinary obstruction.

It is almost unnecessary to draw attention to the frequency with which the condition occurs in pregnancy. Opitz, in a review of eighty-five cases, states that he believes that in the majority there is pressure by the uterus on the right ureter producing sufficient obstruction to cause a chronic urinary stasis in the pelvis and that then infection supervenes.

Others suggest the possibility of traction or stretching of the ureteric orifices with similar results. Frome insists that the enlarging uterus turning always to the right presses on the linea innominata and subsequently on the ureter. In any case it is a well-known clinical fact, that this condition is most frequent in pregnancy and occurs just at the time when the greatest circumference of the uterus is at the level of pelvic brim; and we also know that in the presence of this infection beneficial effects always accrue from instructing the patient to lie constantly on the sound side establishing free drainage.

In consideration of the descending or blood route of infection we may justly point to its occurrence in the following: tonsillitis, influenza, septicæmia, scarlet fever, rheumatism, bronchitis, pneu-

monia and pleurisy, especially in children. Added to this we have the observations of the French school who adhere strongly to the bacterial origin of the nephridites suggesting from within a possible source of the infection.

Infection by means of the lymphatic connexion of the kidney with the surrounding viscera has received a great deal of consideration of late, largely through the classical work of Carl Franke who was able to demonstrate by injection methods an absolute lymphatic connexion between the ascending colon and the kidney capsule. Miller enhanced the value of this demonstration by showing the connexion of the kidney lymphatics with those of the capsule, thereby establishing a straight connexion between the bowel and kidney. One might do well by quoting Franke's conclusions in this regard. He says, "on the right side communications are possible, the direction of the lymph flow is from the intestine to kidney, as the vessels could only be filled up from the intestines and in no case not even in a small part, was it possible to inject the tract from the kidney side." In connexion with this I might mention the clinical observation that pyelitis is more frequent on the right than on the left side.

At this juncture a personal observation may be also of value. In dissections of this region I have observed that the duodenum, particularly at the site of Vater's papilla, is in very close apposition and in direct attachment with the kidney capsule and that, therefore, infected bile moving about this point could be readily transported through the lymphatics to the kidney. We are at present engaged in a study of this lymphatic course.

There does not appear to be any doubt in the minds of modern observers that the lymphogenous route should receive careful consideration. This is strengthened by the repeated observation that pyelitis is so often preceded or accompanied by some lesion in the large bowel such as colitis, or other lesions.

Of all the conditions likely to predispose to this state one would naturally lay emphasis on *constipation*. In nearly every instance of this infection, notably in adults, it is possible to demonstrate the presence of constipation either preceding or accompanying the condition, and repeated observation has borne witness to the fact that recurrences, or relapses, in the course of the disease occur largely with attacks of constipation or obstruction. One cannot emphasize this fact too strongly when the question of treatment is considered.

It is interesting to recall here the animal experiment in which

after the administration of opium for several days causing paresis of the gut, living bacillus coli could be isolated from the mesenteric glands, animal controls at the same time showing negative results. This would appear to show the possible course taken by these organisms in man.

In the case of children one is impressed with the frequent association of pyelitis with attacks of enteritis and in the usual summer epidemics it has been customary for bacteriologists to emphasize the almost constant presence of organisms of this family in the urine. At the same time pediatrists are frequently quoting the instances of the development, notably in girls, of a cystitis with later a pyelitis, and they are of the belief that in this group the infection rises from fœcal contamination of the external genitalia and spread up through the urethra.

As to the anatomical changes underlying the clinical symptoms of pyelitis we would consider them only in so far as they appear to be of importance for the understanding of the whole condition, and as indications for treatment. The pelvis of the kidney is rarely affected severely in uncomplicated cases of pyelitis; there is generally intense hyperæmia or swelling, but such changes as ulceration are rare. In the very acute cases and in the earlier stages it is not unusual to find mild foci of infection in the papillæ of the kidney. We rarely expect perinephritis complications. Pyelography tends to divide these cases into three classes; those showing a normal outline of kidney pelvis, those with slight alterations, and lastly, those with marked changes, i.e., contractions. In this last group, fortunately small, the prognosis is bad.

From the above consideration of the ætiology of this condition we are prepared to accept the already mentioned fact that only in a minority of cases is a correct diagnosis made. We are frequently confronted with cases in which diagnosis of many kinds have been made and in which unnecessary operations have been performed such as appendectomy, with of course negative results.

Clinically the cases appear to fall readily into three classes: 1, in man; 2, the pregnant woman, and 3, in the female child. Typical examples of these would be found in the following cases.

Man

Mr. A., admitted December 18th, complaining of pain in the right side, headache and constipation.

Personal History. Good. No gonorrhœa. In childhood typhoid and rheumatism.

Present Illness. One month ago patient took sick with pain in the right side of the abdomen more behind than in front. The pain was so severe that he could not sleep and lasted with that severity for several days. During that time he suffered from headaches and obstinate constipation; there was some fever, and sufficient prostation to confine him to bed. In the last week or so fever appeared and has persisted up till the time of admission. In the last day or so there has been some frequency of micturition. No cough or expectoration and no vomiting. On examination the heart and lungs were normal and, apart from slight tenderness in the right loin and an unduly sensitive kidney, the abdomen was negative. The urine was turbid, strongly acid in reaction, had a specific gravity of 1026, albumen marked, no sugar, no bile. Microscopically the sediment was found to contain many old and new pus cells, no casts or red blood cells. Cystoscopic examination showed a comparatively normal bladder mucosa. The ureteral orifices were normal. A catheter was cautiously carried up into each ureter a short distance, and the urine collected from each side. That from the left side was normal, from the right was turbid, of acid reaction, contained much pus and culturally gave a pure culture of bacillus coli.

Following this examination the temperature fell. He was kept in bed for almost a month in a half Fowler position on a low diet with purgation, forced liquids and the adminstration of urinary antiseptics such as urotropin. The condition subsided completely.

The following case is submitted to show the more chronic type met with and also the sometimes bilateral involvement.

Mr. J., age thirty-five, admitted complaining of pains in the back and over the bladder.

Present Illness. Six months ago whilst under treatment for an injury to his knee it was discovered that he was suffering from a pyuria. There were no symptoms, referable to the bladder or kidney. Two months later he developed pains in the back of a sharp stabbing character which would last several days and then disappear as rapidly as they had come. They did not radiate, always remaining, as he says, "in the small of his back". With the pain there were frequently fever, chilly sensations and a general feeling of malaise. Because of the increasing frequency of these attacks, he decided to come to the hospital for observation. On admission he was found to be a fairly well nourished man, in good condition. Heart and lungs normal. Examination of the abdomen did not reveal any abnormality. There was no tenderness in the

kidney regions and no palpable masses. Tuberculin reactions were negative. The urine from the bladder was turbid, acid in reaction, showed high percentage of albumen, microscopically a large quantity of pus, but no blood or casts. Tubercle bacilli were frequently looked for but never found. Guinea pig inoculations were negative. *X*-ray did not reveal any abnormality. Cystoscopic examination showed slight congestion of the bladder base, some swelling about the ureteral orifices but no ulceration or tubercles. The urine from both sides was found to contain abundance of pus and the cultures from each side gave bacillus coli and staphylococcus. Treatment was not attempted.

The Pregnant Women

Mrs. M., age twenty-six, primapara, six months pregnant. Admitted to Royal Victoria Hospital, Montreal, complaining of pain in the right side.

Personal History. Had always been in good health, menses regular, the usual childhood diseases, married one year.

Present Illness. Four days prior to admission to the hospital she was suddenly seized with an attack of so called grippe characterized by headache, chilly sensation, fever and general malaise. She was confined to bed. On the fourth day she developed severe colicky pains over the entire abdomen. These increased during the day and a tentative diagnosis of appendicitis was made towards evening; accordingly she was transferred to the hospital. The following morning she felt better but spoke of tenderness in the right upper quadrant of the abdomen when she moved about or was touched and she stated that the pain was confined entirely to that region. There was never any vomiting, but nausea had been present from the beginning. Bowels were very costive and had been for some time. There were no urinary symptoms and there had not been any history of pelvic disease. The urine showed heavy grayish sediment with a strongly acid reaction, specific gravity of 1024, marked albumen, no sugar or bile. Microscopically many pus cells and short thick bacilli were found. Cultures of the urine gave a pure strain of bacillus coli. On physical examination the only abnormality found was the tenderness and muscle splinting in the region of the right kidney. Cystoscopic examination showed a normal bladder. The ureters were catheterized and the urine collected separately from each side. That from the left was normal; from the right it was found to be turbid, of a strongly acid reaction and contained a heavy deposit of pus, cul-

tures showed a pure culture of bacillus coli. In this patient we adopted the postural treatment with rest in bed for three weeks associated with purgation, flushing out the kidney from above by forced liquids, and the administration of urotropin. The condition resolved satisfactorily at the end of that time.

Mrs. W., age thirty-two, seven months pregnant. Admitted to the Royal Victoria Hospital compaining of a dull pain in the right upper quadrant of the abdomen with frequency of micturition.

Personal History. Married two years, one child, normal delivery. Has always enjoyed good health, menstrual habit normal.

Present Illness. Dates back two months when she began to suffer at frequent intervals with attacks of fever, headaches, backaches and pains in the abdomen of a general character; with at times a feeling of general malaise. These attacks were never very severe and were usually transient in character. They have been recurring more frequently of late and have been followed by a sensation of fulness and soreness in the region of the right kidney, and she says that she frequently suffers from frequency of micturition followed by a burning sensation. She has been informed that her urine was comparatively normal apart from a few pus cells which were not considered unusual for the condition she was in. On admission to the hospital she was thoroughly examined and the only abnormality discovered was this pyuria of mild degree. However, whilst under observation she had another attack similar to those already noted and it was found that at this time the pyuria became conspicuous, notably, as the symptoms were disappearing. A cystoscopic examination was made. The bladder base was uniformly congested and small petechiæ were found scattered here and there. The left ureteral orifice was normal; the right was large. Its edges were everted and looked œdematous; there was no evidence of a tuberculosis. A catheter was carefully inserted into each ureter for a short distance and the urine collected from each side separately; that from the left was normal, from the right was opalescent, had a specific gravity of 1026, showed albumen, but no sugar or bile. Microscopically many old pus cells were found; no casts or red blood cells were present. The cultures from this side showed a pure strain of bacillus coli. The functional tests were good. The patient was treated with rest in bed for a month, was encouraged to lie on the left side, was kept on a low diet with forced liquids, purgation, and once a week a pelvic lavage was carried out with warm boracic

solution and followed by silver nitrate instillation. She was discharged with no pyuria, sterile urine, and I believe she went to term and had normal delivery.

The Child

A young girl of five and a half years was admitted complaining of fever.

Personal History. Was born of normal parents, and apart from obstinate constipation had never been ill until the onset of the present illness.

Present Illness. Began six months ago with all the signs and symptoms as what might be styled grippe. She was taken ill suddenly with a high fever, 104°–105°, chilly sensations, sweats, headache, vomiting, and considerable prostration. Her condition was somewhat alarming for several days and then slowly resolution took place and she was able to be about. Note the absence of pain, urinary distress or abdominal discomfort of any kind. The parents stated that she did not recover from this attack at all well and were convinced by the frequent attacks of fever which she had from time to time that she had tuberculosis and prevailed on their medical attendants to have her sent to the mountains. After a short sojourn there she was referred to us for examination.

She was found to have on admission a very slight pyuria and a marked leucocytosis but was otherwise normal. While under observation she developed an attack characterized by high fever, rapid pulse, chills, sweats and marked prostration. It was at this time that careful examination revealed slight tenderness in the right costa-vertebral angle, focusing attention on the possibility of the presence of this condition. The urine was scanty in amount and apart from a few pus cells, was quite normal. Towards the close of the attack, however, it became distinctly clouded and showed a heavy sediment of almost pure pus. Bacillus coli in pure culture was recovered from it. Tubercle bacilli were never found even though guinea pig inoculation was resorted to.

Cystoscopic examination here revealed very slight congestion of the trigone, some eversion of the right ureteral orifice and a normal left orifice. Catheters were gently inserted into each ureter for a short distance and the urine collected. That from the left side was perfectly normal; that from the right side was turbid and contained many pus cells. The pelvis of the right kidney was lavaged twice at intervals of a week. The symptoms subsided,

the pyuria cleared up and to this day, almost a year, she has been very well.

Even though these cases are more or less typical in character it will be noticed throughout each history how varying and sometimes contradictory the symptoms may be. Attempts to classify or tabulate symptoms are as a rule futile; each case being a law unto itself and being judged accordingly.

In the acute cases it is usual to have them ushered in with all the signs and symptoms of an acute infection such as grippe or the exanthemata, that is headache, fever, chilly sensations, chills or sweats, vomiting and generalized abdominal pains, perhaps localized later to one or other side. These general symptoms may last from a few days to one or two weeks and then slowly disappear only to recur in a short time with renewed vigour. The temperature as a rule runs a course similar to acute pneumonia and may present a termination by crisis or at times by lysis. The chilly sensations may last from a few hours to a few days and are often quite severe and may be followed by sweats. Pain, we are told, is the biggest liar in the world, and in pyelitis it is no exception to the rule. It is frequently present in a generalized form and only in the later stages do we expect any localization. When present it does not radiate.

In the more or less chronic and milder types of the disease one may be easily misled by the absence of many or all of these symptoms and our attention may only be drawn to the true nature of the condition by the pyuria, which is demonstrable always at one time or other during the course of the disease.

Symptoms referable to the bladder are extremely variable and misleading. These may be towards the close of the acute attack or in the long standing or chronic cases a sense of fulness or ache in the region of the bladder and at times some disturbance of micturition such as frequency or burning during or after the flow. In the majority of cases they are of little moment; at the same time these symptoms may be confusing factors and have often led to the mistaken diagnosis of cystitis alone, with of course, unfortunate results.

Of all the symptoms those of fever and pyuria stand out preeminently as the most constant and suggestive of all. Heubler some years ago in the German *Archives of Internal Medicine* drew attention to the numerous cases in children of obscure fevers which could be traced to pyelitis. Repeated urine examination, therefore, is of utmost importance in obscure febrile conditions.

It is noteworthy that in several cases recently observed the urine from the bladder was comparatively free from pus during the height of the attack, and only with the subsidence of the fever did a heavy sediment of pus appear, suggesting the possibility of plugging of ureter with later evacuation, drainage, and disappearance of the symptoms. The chief problem we are presented with in the matter of treatment is largely one of drainage, with at the same time due consideration to the special ætiological factor in each individual case whether it be intestinal, pelvic, or blood infection.

There is no doubt that the best single agent at our command to secure drainage is the ureteral catheter. The introduction through the cystoscope of such a catheter into the ureter of the affected side being almost in every instance followed by markedly beneficial and far reaching results. During this procedure it has been customary not only to drain out the thickened or inspissated pus but the kidney pelvis has been lavaged with warm boracic, and when the return flow became clear, 5 to 10 c.c. of a 1 per cent. silver nitrate solution was instilled. This procedure is not associated with pain or distress if one refrains from over-distension of the pelvis, and it may be repeated each week. A cure is obtained only when the cultures of the kidney urine are sterile and the urine is free from pus.

At the same time we should not minimize the fact that many excellent results have resulted from the application of the postural treatment, rest in bed, forced fluids, purgations and the administration of urinary antiseptics such as urotropin. We are aware that the instruction of the patient to lie on the sound side as much as possible has alone given good results, and are forced to admit that in children we are largely dependent on this method of treatment because of the difficulty of frequent instrumentation. Many authorities advance modified treatments, but the one most commonly adhered to is that of alternately changing the reaction of urine by the adminstration for one week of sodium bicarbonate or potassium citrate 2–5 grains every five hours and the succeeding week to give acid sodium phosphate, in this manner creating an alternate alkaline and acid medium. Urotropin may be also given in as large doses as 75 grains in twenty-four hours. The use of vaccines and serums has been singularly disappointing.

Of all the types those associated with pregnancy are the most troublesome and often end most disastrously. It has been the custom of many because of the unsatisfactory result of treatment

and the severity of the disease often in pregnancy to induce labour because this procedure produces early relief, no doubt by establishing free drainage. Surely then, by lavage or the other method of treatment we ought to be able to obviate this drastic step, pelvic irrigation especially having yielded excellent results. Many cures have been established during pregnancy, whereas other patients have been carried to term successfully and then a cure has been established.

There is undoubtedly a very small but distinct group in which all methods fail to meet the requirements of a cure. In these we often have to provide free drainage by the prolonged use of a catheter or by a nephrotomy.

In conclusion, I should like to express my thanks to Drs. W. W. Chipman and Oertel for their kind assistance in the preparation of this paper.

BIBLIOGRAPHY:

CROOM.—*Brit. Med. Journal*, October 18th, 1913, 991.

EISENDRATH and SCHULTZ.—*Journal Med. Research*, March 6th, 1917, vol. xxxv. New series, vol. xxx.

WATSON.—*Journal Can. Med. Assoc.*, March 5th, 1916, p. 181.

GERAGHTY.—*Journal Amer. Med. Assoc.*, December, 1914, vol. lxiii, No. 25.

WILLIAMSON.—*Brit. Med. Journal*, October 18th, 1913, p. 994.

WOOD.—*Archives Pediatrics*, vol. xxxii, No. 3, March, 1915.

FRANKE.—*Mitteilungen a. d. Greiz Gebieten d. Medizin u. Chirurgie*, xxii.

BOLCH.—*Zur Secundären Coli-infection der Mierenbecken, Deut. Mediz. Woch*, 40, 6, 1914.

HURDEMAN.—*Deut. Zeit. f. Chirurgie*, Band 120, 1913.

ROSVING.—*Münch. Med. Woch.*, 1909. No. 36, p. 1861.

STOCKEL.—*Zeit. f. Gyn. Molog.*, 1908, 1, 43.

ROSVING.—*Klinsche. und exper. Unter-sucheungen über die infectiosen Krankheiten der Harmorgave*, Berlin, 1898.

MULLER.—*Arch. f. Klin. Chirurgie*, 1912, xcvii, 44, 72.

BAUEREISEN.—*Zeit. f. Gyn. Urol.* 1910, 11, 132. *Ibid. Gyn. Urol.*, 1911, 11, 235.

SWEET and STEWART.—*Surg. Gyn. and Obst.* 1914, xviii, 460-469.

THE Sixth Annual Congress of the Canadian Public Health Association will be held in Ottawa on September 27th and 28th, 1917. The meeting of the Canadian Association for the Prevention of Tuberculosis will also be held in Ottawa on September 26th, 1917.

SUGGESTIONS FOR A FURTHER CLASSIFICATION OF CASES OF SO-CALLED SHELL SHOCK

By H. P. Wright, Captain, C.A.M.C.

THE importance of differentiating the cases now called shell shock will, I think, be appreciated by all those who have to do with the preparation of A.F.B. 179, the Medical Boards, and lastly, that important board which it should be the ambition and duty of all medical officers to counsel wisely and honestly,—it is almost unnecessary for me to say that I refer to the Pensions Board. This is the *prima facie* final board to which all Medical Boards may lead, and on the work of which depends the Government's final responsibility to its soldiers, so that deserving cases may be justly rewarded, and undeserving and malingering ones treated with the scant courtesy that they deserve.

I do not for a moment think that it is possible to draw any hard and fast rules, tabulating the different kinds of so-called shell shock, but I am quite convinced that it is only by a careful consideration of each case that justice may be meted out, and the object of this paper is, to turn the compass of more competent and able brains in this most important direction.

Shell shock has been defined as the symptoms produced by exposure to the forces generated by the explosion of high explosives without visible injury. This is the only definition that I have ever heard given to shell shock, and while I have no quarrel with it as far as it goes, my only concern is that it does not go far enough. Before leaving the definition I would like to express a doubt as to the advisability of the nomenclature. The name itself is often enough to retard the recovery of these very sensitive and susceptible patients—but, I suppose, the love of the medical profession for a loose term such as influenza, myalgia, or shell shock is unweanable.

In South Africa when a man was "fed-up" to the bursting point he had "Manseritis"; in this war he often falls back on "shell shock".

Read before a meeting of the Medical Society of the Granville Canadian Special Hospital, Ramsgate, Kent, and before the Canadian Medical Association, June, 1917.

From my observation of cases at the Granville I would like to submit the following classification of shell shock.

1. Shell Concussion.
2. Shell Hysteria.
3. Shell Neurasthenia.
4. Malingering.

Shell Concussion. A condition of unconsciousness caused directly by the physical forces generated by high explosives, and in the large majority of cases followed by a traumatic neurosis.

In this class, the man is most frequently knocked unconscious and either is buried and suffers an injury to his head or is blown up and lands on his head. A man injured in this way *does not remember hearing the shell coming and has complete loss of memory from the time just previous to the explosion, to a period varying from half an hour to hours after the explosion.*

The general symptoms of this class are: headache, dizziness, loss of memory, shaking, and very often by the time they reach this hospital a traumatic neurosis has developed. Two most important points are that they do not hear the shell coming, and that they do suffer from loss of memory. In regard to the first, it would seem that certain types of shell can be heard while others cannot, and the only explanation is, that as a result of the concussion their loss of memory is "antedated".

Of course, the second point has to be brought out by careful questioning, and even then one cannot tell what the patient's memory was like before the injury.

In this class it is not difficult to accept the pathogenesis of shell shock as described by different observers, e.g., increased pressure of spinal fluid, and the presence in it of albumen, blood, etc., for the first forty-eight hours. These cases usually recover, of the others that die, we do not know. I suggest that this is the only class of shell shock that die from the original trouble.

In ordinary simple concussion of civil life the syndrome of sequelæ that is most feared is traumatic neurosis. If this is so often a complication in uneventful peace times, how much more likely it is to develop after a concussion resulting from a terrifying cause and in a bloody and fearful environment.

In a consideration of the three last groups—Shell Hysteria, Shell Neurasthenia, and Malingering, I fully appreciate the great difficulty of separating them from one another, and realize that in both hysteria and neurasthenia there may be an element

of malingering, and that the term psychogenetic, which is employed by Major Russel, satisfies all these demands. Still, psychogenetic, to my mind, implies a generic term. Could not any mental case not of an organic nature be classed as psychogenetic? Therefore it is my endeavour to classify further these psychogenetic cases.

The mental picture of traumatic neurosis, shell hysteria and shell neurasthenia, is very similar. Certainly by the time they arrive at this hospital they have much in common. Without attempting to discuss this from a psychological or metaphysical point of view, I cannot refrain from recalling the old and familiar simile which compares a piano to the brain and the "ego" or "will" to the man who plays the piano. The piano is no good without the man and the man cannot make music without the piano. In these psychogenetics, the "will" seems to have lost control of the brain. The brain is good enough but the will is at fault: or to express it in another way, the subconscious self has got the better of the conscious self; or again, the higher centres have lost control of the lower centres. Be that as it may, the fact remains that the primary cause of the trouble is psychic. How this disturbed psychism manifests itself is of little importance. That is, whether the man is blind, or dumb, or has a functional paralysis, the mental pathology is the same. In other words, a discord has resulted and the patient should be taught to functionate without discords. To treat the blindness or paralysis as though it were the disease is almost parallel to treating the secondary rash of lues locally and leaving the *Treponema pallidum* to roam about at will in the body. Just as one is sure to get rid of the rash, so, one with faith and enthusiasm will overcome the blindness or paralysis, but, *the original disease remains*. If, on the other hand, the disease is treated, the symptoms will disappear quickly enough. The only way to treat the disease is to help the patient to regain control of his mind. In certain cases, e.g., deaf and dumb men, I have resorted to hypnosis, recognizing that I was treating a symptom, and later, I have endeavoured to treat the disease. Just one more point before leaving this interesting and elusive subject. I suppose I am safe in saying that in sleep the will or higher centres are in abeyance—still we dream—and what a dream is I dare not discuss—and who has not awakened from a dream with a very vivid remembrance of some so-thought physical suffering undergone in the dream. May not the pains and aches of neurasthenia and hysteria be compared to the sufferings of the dreamer?

Shell Hysteria. A condition of superemotionalism, in which one or more of the senses is hyperbolic and exaggerated, without any known organic cause.

The largest percentage of shell shock cases sent to this hospital have an hysterical basis; there are several potential factors of interest.

1. Hereditary mental instability.
2. Acquired mental instability, such as nervous diseases the patient may have had in childhood or youth, e.g., convulsions, chorea, "fits", etc.
3. Age.
4. Alcoholism.

Age. The selected sex of ordinary hysteria must, even by suffragettes, be acknowledged to be their sex, and, I suppose, the favourite periods placed at the genesis and exodus of their womanhood. While I will not say that the cases of shell hysteria are of a lady-like disposition, I have been impressed by the fact that they are universally under thirty years of age, and very often in the teens or early twenties.

Alcohol. The habit of issuing rum to men just before an attack, while it undoubtedly gives them a devil-may-care and pugnacious feeling, also in its after depressing effects renders the nervous mechanism more susceptible to any shock. If alcohol acts by depressing the higher centres (and it is interesting to remember that the effect of alcohol lasts for twenty-four hours) may not alcohol plough the field of the brain and so prepare it for the psychic seed of shell hysteria?

A discussion of the pathology of hysteria is, of course, far beyond me, but it seems to be an affection of the senses with a correspondingly disorganized perspective. Gaskill and his school have definitely proved that the sympathetic nervous system is an outgrowth of the central nervous system. What control the central nervous system exerts over the sympathetic system I am not prepared to say, but certainly in shell hysteria there are certain manifestations which imply a disturbance of the sympathetic nervous system.

History. The first point to note is, how long the man was in France and under what conditions. This is most important, as *shell hysteria very seldom occurs in a veteran of some months standing.* The personal and family history are important for the investigation of any mental or acquired instability and alcoholism. Under present illness, usually, there is *a history of having heard the shell*

coming and of a subsequent semi-conscious condition. Whether or not they do actually hear the shell is impossible to say. If they do not, I think that very often on account of their hypersensibility they imagine that they have heard it, and it is interesting to note that the history invariably bears out this statement. The symptoms that subsequently occur may vary enormously depending on the strongest psychic impressions just previous to being buried or being blown up.

Again other hysterical stigmata may result from suggestions made by an orderly, nursing sister, or medical officer in a C.C.S. or other hospital. The patient's mind is in so receptive a state, and as a result of his experience, he is only too glad to welcome any symptom which may manifest itself in such a way that he may become unfit for further active service abroad. There is no better illustration of this point than the fact, that patients with an objective wound seldom or never develop shell hysteria. It is in this class of self-inoculated cases that one is almost forced to conclude that there may be an element of malingering—certainly it is easy to understand the motive.

Physical Findings. There are only two or three points that I know of that are of any interest in the physical examination. Patient usually fairly well nourished. Tremor of the tongue and hand. Pulse rate slightly increased and quite noticeably so on exertion or excitement. Usually profuse sweating under the armpits. Marked dermatography, usually of a dilatory type. Blood pressure, systolic from 130–145, diastolic 90–100. Knee jerks noticeably increased. No pathological reflex, but often a pseudo ankle clonus.

In fact, many of these cases, by their physical findings, could be easily confused with hyperthyroidism; and my own theory is that when the brain is lost control of by the "will" it, in turn, disturbs the sympathetic nervous system and so one sees the above picture.

To recapitulate, the important points to notice in shell hysteria are:

1. History of hearing shell coming.
2. History of inherent or acquired mental instability.
3. Alcohol.
4. Age, and length of time in France.
5. Physical findings, pulse, sweats, and so on.

Shell Neurasthenia. A condition of bodily and psychic asthenia occurring as a result of the exigencies of active service.

A consideration of the possible ætiological factor of shell

neurasthenia must of necessity be very similar to shell hysteria, and it is unnecessary to rediscuss hereditary and acquired mental instabilities and alcoholism.

Age. The majority of cases are amongst the *older men as opposed to the hysterias*, which so frequently occur in youths. The reason of this may be that, as a rule, the older man has himself under better control, and so manages to escape shell hysteria. However, after months, the struggle is too much for him and he succumbs to nervous and bodily exhaustion, and the result is the typical neurasthenic. Neurasthenia, in a man who has put up a good fight for some months under trying circumstances, is an unreasonable disease with a reasonable cause—and I would go further, and say that shell neurasthenia would almost certainly result in any one of us if we "stood the gaff" long enough. It is only by the judicious withdrawal of battalions, etc., from the front line to billets, where they may rest and recuperate, that the British Army is saved from being an army of neurasthenics. Naturally enough, too, with men as different from one another as trees, some bow before the storm at an earlier phase than others—and the first to go are the ones that have some inherent or acquired mental instability. I do believe that the neurasthenic puts up a fight. The hysteric approaches the ordeal in much the same spirit as the putting up of hands and "Kamerad" of the German prisoner. At the first opportunity, they both willingly surrender.

Syphilis. In its tertiary state this is a disease primarily of the nervous system and Russel's exhaustive theory, which so satisfactorily explains the order of the occurrence of the symptoms and signs of syphilis of the nervous system, is very helpful here. In tertiary syphilis that part of the nervous system which is exercised most, first shows fatigue and eventually paralysis. Neurasthenia is exhaustion, and I suppose no two things age a man more quickly than alcohol and syphilis.

The symptoms of shell neurasthenia are variable. However, nearly all complain of headaches, dizziness, insomnia, anorexia, and usually visceral or spinal pain. In fact they are ordinary neurasthenics with an easily explainable cause.

I imagine that the cases of shell shock resembling Addison's disease, which have been recorded by Crile, are the truest examples of shell neurasthenia. However, by the time they arrive at this hospital the more striking signs have disappeared. The asthenia is on the high road to recovery and the only manifestations of

neurasthenia that remain are the mental ones—and these, I expect, will remain either till they are treated psycho-therapeutically, or the cause of the disease is removed, i.e., the war ends.

Malingering. It is not my purpose to consider the ways and means for its detection, and I have only included it in the possible category of shell shock because no classification would be complete without its enrolment. To endeavour to detect the malingerer is not at all a palatable task, but, in the interests of the country, it must be done. Genius has been defined as the capacity for taking pains, and infinite patience and a suspicious mind usually discover the imperfect detail of the symptoms or signs of the malingerer.

Modified forms of malingering, such as hystero or neuro-"malingeritis", are of a different nature. The shell hysteric or neurasthenic may develop into a malingerer, and the cause is not hidden or difficult to find. It is assuredly difficult to supply an impulse greater than that of self preservation. The shell neurasthenic or hysteric frequently does not recover as quickly as he would if the war was over and the state of civilization not sufficiently advanced to set up the Pension Boards.

PROFESSOR FRASER HARRIS represented Dalhousie University Medical Faculty at the recent meeting of the Medical Council of Canada, which took place in Ottawa on June 12th. Some quite important business was transacted and arrangements made for future work. The examiners for October, 1917, and June, 1918, were appointed.

It is greatly to be regretted that neither of the gentlemen who had been elected by the Medical Board of Nova Scotia to represent that province, was present. Much of the work of the Federal Council can proceed efficiently only when all the provinces are represented by their only accredited representatives. To have a province completely unrepresented is not contemplated in the Act constituting the Council.

FRAGILITAS OSSIUM, WITH REPORT OF A CASE

By Alton Goldbloom, B.A., M.D.

Montreal

FRAGILITY of the bone has long been known to be associated with certain chronic diseases, notably phosphorus poisoning, congenital lues, tabes, malignant disease, and senility. In all these the underlying cause is usually quite evident or can be found by the usual diagnostic methods. Lobstein, in 1833, was first to call attention to a peculiar disease entity characterized by an idiopathic, usually hereditary, predisposition to fractures from very slight violence. Such a case came under our observation during the past winter at the Royal Victoria Hospital in the service of Dr. Archibald.

The patient was a farmer aged thirty-three, and was admitted to the surgical wards of the Royal Victoria Hospital on February 21st, 1917.

Present Illness. Two days before admission the patient was kicked by a cow over his left patella. He fell to his right side and was unable to raise himself from the ground. His doctor told him that both legs together with his left knee cap were broken.

Past History. The patient has been subject to fractures ever since he was fifteen months old, the present accident making his forty-ninth fracture. The first occurred at the age of fifteen months while he was learning to walk. His father told him that he merely leaned against a door when his left leg gave way under him. Other fractures followed in rapid succession involving the left forearm once, the left femur twice, the right tibia and fibula about ten times, while the remaining thirty-five involved the left tibia and fibula usually at a point about three inches above the ankle joint.

Five years ago he fell on his knees and fractured the left patella transversely. This was sutured at the Royal Victoria Hospital

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by Dr. Garrow. Since then he was free from fractures until his accident of two days before his present admission.

Forty of these fractures or 83 per cent. occurred before he was fifteen years of age. They were frequently spontaneous or at most occurred after some very slight cause such as a sudden turning on his heel or a slight jar. Repair was always very rapid.

At the age of six he developed a marked scoliosis with the main convexity to the right involving the dorsal vertebræ from the fifth to the twelfth. At the age of seven a right genu recurvatum developed for which an osteotomy was performed at Montpelier, Vermont. Apart from his fractures his previous health has been excellent.

His family history was quite negative, there being nothing in it to suggest hereditary predisposition, as is nearly always the case in this disease.

Physical examination shows a fairly well developed and nourished young man of somewhat flabby musculature. Apart from his osseous system, the general examination is quite negative save for one very interesting point, namely, the colour of his sclerotics which are of a china blue. This feature, we subsequently learned, is pathognomonic of the disease we are discussing; a point which we shall refer to later on.

His skull is slightly bossed, prominent ridges can be felt all along the suture lines, otherwise it is normal. There is a marked right-sided scoliosis and along the costo-chondral junctions can be felt what is evidently the remains of a rachitic rosary. All the long bones present apparently normal epiphyses and rather thin shafts. This could be very easily made out upon examination and it is very beautifully illustrated in the radiograms. (See figure). This anomaly doubtless explains why it is that in this disease the fractures are nearly always in the shafts and rarely in the epiphyses. The right tibia is very irregular in outline just above the ankle, the result of numerous badly united fractures; while the right leg presents a moderate genu recurvatum. At the present admission the fractures involved both tibiæ and the left patella. That of the left tibia is a green stick fracture just below the upper epiphysis, while that of the right is oblique through the upper epiphysis on the inner side and evidently intra articular.

On February 23rd, 1917, operation was performed by Dr. Archibald for suture of the patella, when the very unusual combination of transverse fracture of the patella together with avulsion of a splinter of the tubercle of the tibia was found. These were

repaired in the usual manner and both legs were put up in plaster.

Diagnosis: Fragilitas ossium.

REMARKS. The disease is a very rare one. It is known variously under the names of Fragilitas ossium, Osteogenesis imperfecta, and Osteopsathyrosis idiopathica. This is the only such case in the records of the Royal Victoria Hospital. Bamberg and Huldschinsky have only been able to find one hundred and five cases in all the literature up to 1913. It is characterized by an extreme predisposition to spontaneous fracture, usually hereditary and usually showing itself quite early in life. It is twice as common in males as in females. Bowing of those bones which are subjected to weight bearing is a very common associated condition. The rœntgenograms of the long bones show a clearly defined medullary canal with a sharply outlined thin cortex in the shaft, while the epiphyseal ends are almost without medullary outline. The thinness of the shafts compared with the size of the epiphyses is a characteristic feature. As exemplified in this case the predisposition to fractures tends to disappear when adult life is reached.

The sclerotics are always of a china blue colour. It is interesting to note that where the hereditary predisposition to fractures has been present it showed itself only in those members of the family who had blue sclerotics: those who had white scleræ did not have fractures and moreover bred true, that is to say, none of their progency had blue scleræ or showed this diathesis: while those who had blue sclerotics not only were liable to fractures, but also transmitted this trait. In no case has the condition been known to skip a generation. Burrows has reported such a family in which he has traced the blue sclerotics through four generations. There were twenty-nine individuals in all: thirteen had blue sclerotics and of these nine had brittle bones. Among the remaining fourteen members who had white sclerotics not one was known to sustain a fracture.

Conlon has reported five generations of blue sclerotics in a family. In his series 84 per cent. in all of the offspring showed the anomaly. Stephenson's family was traced through four generations and Harmon's through five. Numerous detailed pedigrees may be found in the literature, in the main they all agree with Burrows' observations.

The condition of the scleræ was first called attention to by Eddowes in 1900 and the connexion with brittle bones emphasized. It is said to be "due to a deficiency of fibrous tissue in the sclerotic

coat, whose thinness and translucency allows the underlying choroidal pigment to be seen". This point can be understood when we consider that bone and connective tissue are both of mesoblastic origin. We have already noted the flabby, atonic musculature in our patient. In other cases this has been described as definitely atrophic (e.g. Bookman's case). If we add to this the fact that besides the calcium deficiency in the bones the stroma (which of course is composed of connective tissue elements) is largely deformed, it is probable that we are dealing with an embryonic defect involving all mesoblastic structures and not with a disease of bone *per se*.

The pathology of the disease is not thoroughly understood. There is evidently an inability on the part of the tissues to form normal bone. Not only is the calcium diverted to other uses, but the histological structure of the bone is altered, the laminæ being either imperfectly formed or entirely wanting.

McCrudden, Bookman, and others have studied the metabolism in these cases and have found a definite disturbance in the calcium equilibrium. In Bookman's case the calcium retention was only 11·7 per cent. of the calcium intake. After the addition of calcium lactate to the food the retention was raised to 42 per cent. of the intake. He also found that the calcium retention was favourably influenced by phosphorus and cod liver oil just as it is in rickets. Bamberg's case had no fractures during one year's treatment with the latter.

The treatment is of necessity very difficult. Metabolism experiments would seem to indicate the use of calcium salts or phosphorus and cod liver oil, but these cases are so rare that statistics of any value are so far unavailable. Plisson (quoted in Speed's book on "Fractures and Dislocations") has reported a case in which there were eighteen spontaneous fractures in nineteen years; the patient was put under treatment by adrenalin after which no more fractures occurred. Yet as our own and other cases have shown that the tendency to fractures diminishes with the approach of adult life, it is very likely that the adrenalin was given at an opportune time leading to a confusion between post and propter. Strontium and pituitrin are among many drugs that have been tried without any great benefit. Although in such cases all methods of treatment suggested deserve a thorough trial, we must of necessity devote our main attention to prophylaxis against any slight traumata which might result in fractures. When fractures do occur the greatest possible care must be taken to keep the fragments in good position. Healing, as we have said, is rapid,

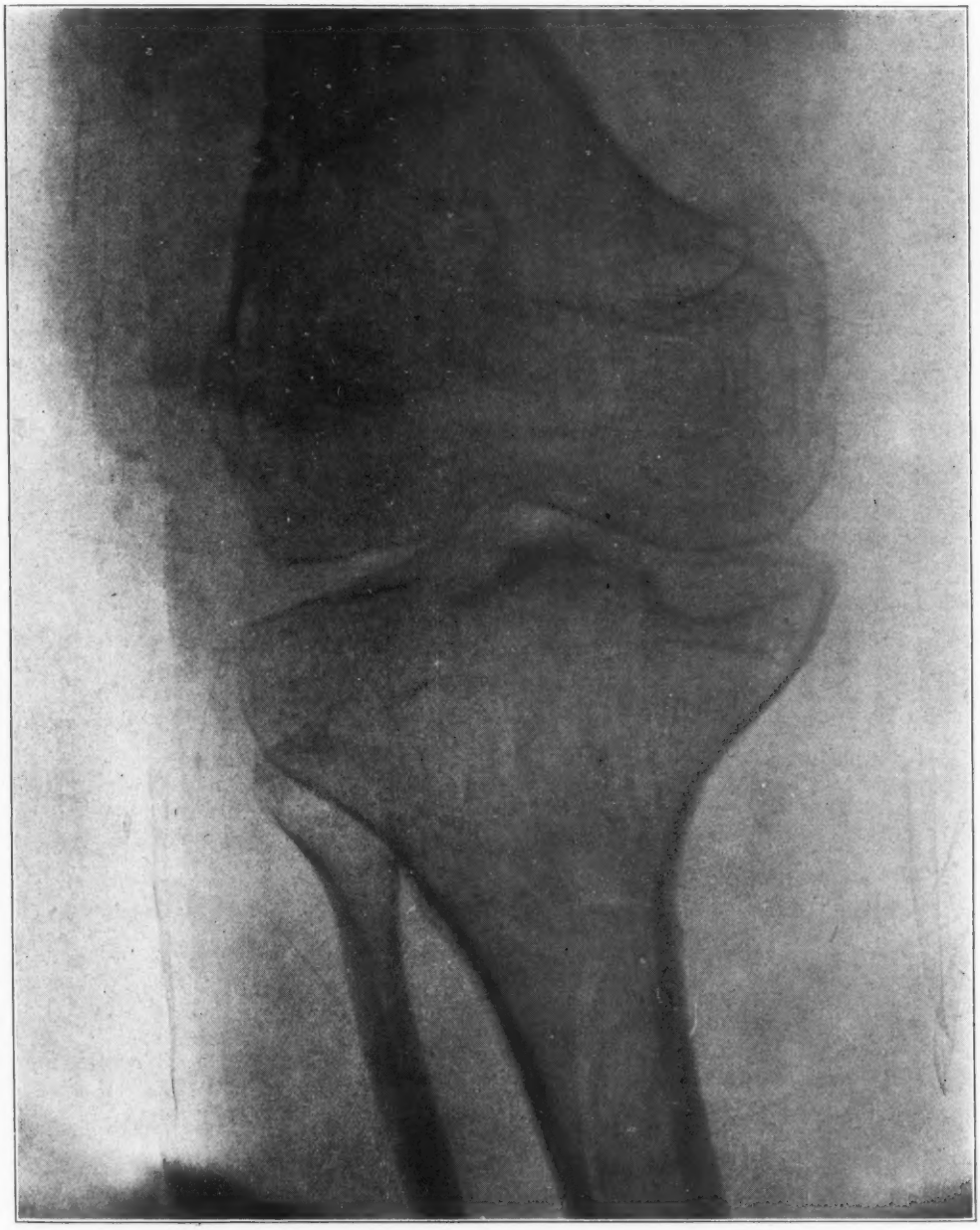
and before puberty is accompanied by abundant callus formation. Our aim must be to avoid deformity. We have seen that the intervals between fractures become gradually longer so that by the time adult life is reached a patient may with proper care have a serviceable pair of legs. No such care had been taken with our own case with the result that he came to us with his leg so deformed that he was unable to get about save on crutches and then not without considerable difficulty. A little care in his early days would have made him a great deal more useful to himself and others than he is at present.

In conclusion, I wish to express my indebtedness to Dr. Archibald for the privilege of presenting this rare and most interesting case.

References:

Bamberg and Huldschinski.—*Jahrb. f. Kinderheil*, 1913, lxxviii, p. 214.
Burrows.—*B.M.J.*, 1911, ii, 16.
Conlon.—*Boston Med. and Surg. J.*, 1913, clxix, 16.
Stephanson.—*Ophthalmoscope*, 1910, viii, p. 330.
Harmon.—*Ibid.* 1910, vii, p. 559.
Bookman.—*Arch. Int. Med.*, 1911, viii, p. 675.
Bookman.—*Am. J. Dis. Ch.*, 1914, vii, No. 6, p. 436.

A deputation from the Association for the Care of the Feeble-minded of Toronto recently waited upon the Separate School Board with a request that the Board should lend its coöperation in an effort to separate the feeble-minded children from others and place them in cottages on the municipal farms near Thornhill. It was stated by Dr. Hincks that during the past three years one thousand cases sent from the Juvenile Court had been examined at the General Hospital and that of these 676 were mentally deficient; 285 were inveterate thieves, 59 had been guilty of starting fires, 120 had committed acts of grave bodily injury, and 59 were guilty of sexual immorality.



Case of fragilitas ossium showing green stick fracture of the tibia. Note particularly the size of the shafts compared with the epiphyses, the sharply outlined cortex in the shafts, and the almost complete absence of cortical outline in the epiphyseal ends. Note also the extremely thin shadow thrown by the bone.

Case Reports

TRAUMATIC EXTRA-PERITONEAL RUPTURE OF THE BLADDER WITH FRACTURE OF THE PELVIS

By Max O. Klotz, M.B.

Ottawa

THE comparative rarity of the accident, judging at least from the number of cases reported in the literature, is sufficient reason for a report of the following case.

Quain, in *Surgery, Gynecology and Obstetrics* of July, 1916, reviewing the literature, reported only one hundred and twenty-seven cases, covering almost one hundred years, of whom about one third were from the United States and the remainder from abroad. Hawkes reported a further case in the *Annals of Surgery*, February, 1917, with recovery. The mortality, on the whole, has been high, Quain stating the total mortality to be 74 per cent. and of eighty-three cases reported before 1890 the mortality was 86·7 per cent. In forty-four cases published subsequent to that year the mortality was 48 per cent. The records since 1905 show further improvement, in so far as the mortality has been reduced to 38 per cent.

A probable reason for the high early mortality lay, partly, in the imperfection of the technique, but more probably in delayed operative interference, as a result of which septic infections were sure to be followed by a very high death rate.

In considering the diagnosis of a probable rupture two or three points only will be borne in mind.

First. The location and the character of the injury. The patient's symptoms invariably point to serious lesions in the pelvic frame about the pubic arch and the history itself will give definite information as to the source and type of the factors producing the injury.

Second. Inability to void urine and possibly the appearance of a few drops of blood at the meatus. Catheterizing may not be

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followed by the withdrawal of any urine whatsoever, or may permit of the drainage of a small quantity of blood only, or a mixture of blood and urine.

Third. Palpation of the suprapubic region is not alone painful, bu fails to reveal the presence of a normally distended bladder, and percussion may also fail to give any characteristic dull note, indicating the presence of a normally distended bladder.

Both palpation and percussion, however, are not always dependable, as a case seen some hours after the accident may give both a dull note and show the existence of a mass in the region of the bladder, which may be due to the extravasation of a large amount of both blood and urine into the prevesical tissues. There is not necessarily very much shock; certainly nothing like the amount one would find in the case of a intra-peritoneal rupture. On the other hand, although there is always great pain, definitely localized to the region of the bladder, and fruitless efforts at voiding, rectal examination as a rule gives us no great assistance at arriving at a diagnosis beyond confirming the seat of the pain, which is limited to the bladder and its immediately surrounding tissues.

Fracture of the pelvis, more particularly of the rami of the pubic arch, is almost always present, but crepitus is not always to be definitely felt; certainly not without an anæsthetic, the splinting action of the mucles often fixing the fragments and preventing definite movement. An *x*-ray examination should always be made at once, when at all possible. In the absence of facilities for doing so, no time should be lost in proceeding at once with operative measures, in the first place to drain the peri-vesical tissues and in the second place if possible, to close the rent in the bladder wall. The latter procedure is frequently associated with great difficulties and may be quite impossible, particularly if the rupture is deep-seated, lying almost behind the lower border of the pubic arch and involving the bladder wall at a point close to the sphincter. In these cases little remains to be done but to follow the usual routine of careful drainage and irrigation, when the wound will close spontaneously, generally in about six weeks' time, depending upon the size of the original opening.

The history of the case is as follows.—W. C., aged twenty years, strong, healthy, young man, driving for a local dairy. While delivering milk early the morning of February 21st, 1914, the sleigh on which he was driving was struck by a street car, the approach of which he had failed to note. He was thrown on the tracks in front of the car, falling under the fender and immediately in front

of the wheels, which were locked by the brake but were skidding on the snowy rails. Except for the fact that the road was particularly smooth with frozen snow and ice, he would probably have been crushed to death. As it was, he was pushed ahead of the car for a distance of some forty feet, the pelvis being the point on which most pressure was exerted.

Examining him on his arrival at the hospital, I found his general condition good, but he complained of great pain in the bladder. He had been unable to stand without assistance, although he had tried to do so but found himself unable to carry his weight owing to pain in the pubic region. Examination revealed a few drops of blood exuding from the meatus, and the passage of a catheter was followed by the withdrawal of less than half an ounce of blood and urine. Distinct crepitus was not felt, but palpation of the left upper pubic ramus, within about two inches of the symphysis was so acutely painful that a diagnosis of fracture was made, which was confirmed by *x*-ray photograph, which was immediately taken. A diagnosis of rupture of the bladder being practically established, he was immediately transferred to the operating room and the prevesical space opened by a median incision. The subcutaneous tissues were intensely infiltrated with blood and the reflexion of the peritoneum itself upon the bladder more or less œdematous, showing evidence of extensive contusion. The bladder lay deep in the wound, was collapsed and on examination found to have a ragged tear of about an inch and a half in extent on its anterior wall, immediately above the sphincter, and projecting into the wound in the bladder was the outer fragment of the left ramus, which had been displaced downwards and backwards, the end of which terminated in a long spicule. The fracture was fairly readily reduced and remained in position without any further dressing than the application of extensive adhesive strapping around the pelvis.

It was found quite impossible to suture the rent in the bladder, so that after thoroughly evacuating all blood clots and irrigating with a saturated boric acid solution, nothing further was done but the placing of a drainage tube down to the opening in the bladder wall. At the same time a permanent catheter was inserted through the urethra and irrigations carried on at first every six hours, which were shortly reduced to twice daily. He had absolutely no bad symptoms until March 12th, when it was found that a small pocket of pus had collected in the most dependent portion of the space of Retzius, and this was drained by a tube carried to

the site of the infection by the ischiorectal route. From that time he had no further difficulty and the whole wound was completely closed up on April 25th.

Unfortunately, about ten days before the wound finally closed he showed symptoms of typhoid, which were confirmed by blood tests, and he had the misfortune to spend another two months in the hospital before he was quite recovered from a severe typhoid infection. As it happened at that time, there was still considerable typhoid in the city, and certainly a very large number of carriers, following the very severe epidemic which had afflicted Ottawa during the immediately preceding years.

When he finally was released from the hospital he had not the slightest difficulty in walking, running or jumping and had as perfect control over his bladder as ever. As a matter of fact, he felt not the slightest inconvenience from his very serious accident.

THE following is the list of candidates who were successful in passing the examinations of the Council of the College of Physicians and Surgeons of Ontario: Howard R. Adams, of Freeman; Norman E. Betzner, of Moose Jaw, Saskatchewan; York Blayney, of Toronto; Arthur J. Boyce, of Goderich; Ernest A. Broughton, of Whitby; William E. Brown, of Gananoque; Frederick J. H. Campbell, of London; Thomas F. Carter, of Kingston; Thomas C. Clark, of Dundas; Robert D. Collier, of Picton; Isaac Cohen, of Sault Ste. Marie; Wilmer L. Denny, of London; John F. Doyle, of Kingston; W. H. E. V. Duffett, of Adolphustown; D. D. Ferguson, of St. Thomas; H. O. Foucar, of London; N. W. Furey, of Toronto; G. D. Gordon, of Kingston; Malcolm G. Graham, of Rodney; W. L. Graydon, of Toronto; Arnold Grisdale, of Niagara Falls; J. H. Howell, of Welland; L. M. Jones, of Chesley; J. A. Key, of Shanty Bay; G. F. Laughlen, of Point Anne; Patrick Leacy, of Lanark; F. W. Leech, of Newborough; A. E. McKenzie, of Toronto; J. W. McKenzie, of Toronto; G. W. MacNeill, of Owen Sound; T. N. Marcellus, of Finch; W. M. Martyn, of North Bay; W. T. B. Mitchell, of Watford; C. J. A. McKillop, of St. Thomas; W. C. O'Donoghue, of Smith's Falls; A. Phelphs, of Windsor; H. A. Rawlings, of Toronto; J. W. Reddick, of Toronto; J. A. Renwick, of London; P. R. Shannon, of St. Thomas; F. R. Smith, of Barrie; D. J. Taitt, of Brooklyn, New York; C. A. Wells, of Toronto; J. McS. Young, of London; R. S. Murray, of Galt.

Editorial

THE PRESIDENT'S ADDRESS

THE Committee of Arrangements of the Montreal Meeting made a change this year in the usual programme by having the President's Address delivered after the Annual Dinner of the Association. Messages of congratulation were read from members of the Association who are overseas, including one from Colonel Murray McLaren, C.M.G., the past president. A cablegram from Colonel H. S. Birkett, C.B., Officer Commanding No. 3 Canadian General Hospital (McGill) in France, and Dean of the Medical Faculty of McGill University, unfortunately did not arrive until the following day and therefore could not be delivered to the members at at the same time as the other messages. It read: "All members of the Association in the unit under my command join me in best wishes for success of meeting."

In his address, which we publish in full in this issue of the JOURNAL, the President drew attention to the fact that the present year is the fiftieth since the inception of the Association, and quoted the objects which those who were instrumental in founding it hoped to accomplish by a Dominion-wide society. In how far these objects have been attained and where failure has resulted, he recounted, and then proceeded to outline in a broad way the problems which the medical fraternity will be called upon to solve in the near future, including that of national insurance against sickness and accident. The President urged upon the members the necessity of being prepared for this and, rather than have such matters forced upon the notice of the profession by legislative enactment, suggested the appointment of committees whose duty it would be to study the problems presented, and who would, therefore, be in a position to coöperate with the Government when the time came.

If our Association is ever to take the place which its founders hoped and worked for, and become the recognized authority in all matters pertaining to its special sphere, it will only be by giving more prominence to this feature in our annual gatherings, for the care of the public welfare is the only point at which we as an association touch the general public as a whole. The President's suggestion should be thoughtfully considered by every member of the Association. It will be the duty of a future meeting to decide what is the best means of carrying it out. Living as we do in a country of such great distances that it is only possible to have a representative gathering of our members brought together for a few days annually, and the appointment of committees to study the problems during the intervals between the meetings would probably have little result owing to the difficulty of getting such committees together. We have, however, in the Executive Council which consists of the office bearers of the Association and fifteen members elected annually by ballot, a body which should be representative of the whole Dominion. But under the present by-law the Council must be chosen from those members who have registered as present at the meeting, and the election takes place at the first general session, that is, at the opening meeting of the year. As a result, in the recent Montreal meeting only one third of the total number enrolled as present at the meeting were eligible as members of the incoming Council when the choice was made on the first day. Postponing the election of the Council until a later date would overcome this difficulty, and in appointing sub-committees for drafting reports on subjects of public welfare, the Council might be given power to add additional members, who have special qualifications to act on such committees. The alternative plan of having committees appointed at each meeting to bring in reports during the meeting would mean failure from want of time and the press of other business.

The Canadian Medical Association can never become a real power in the country like the American association until

it is able and ready to speak authoritatively for the whole of Canada upon all subjects relating to public welfare. We strongly urge upon the President and his Executive Council the formulation of a plan for presentation at the next annual meeting whereby the policy which he so ably advocates may become one of the principal features of every meeting.

THE ADDRESS IN MEDICINE

THE delivery of the Address in Medicine (published in this issue) by Dr. Theodore C. Janeway, of Baltimore, was an event of importance in the annals of the Association. Speaking out of a wide experience, with scholarly incisiveness, and from the point of view of the modern consultant, upon some of the finer distinctions of medical science, Dr. Janeway touched the higher ideals and aspirations of the profession, and elicited a glow of enthusiasm and the deep attention of his crowded audience.

Taken as a whole, the Address may be described as a thoughtful and original pronouncement upon the province of that ideal physician who, whether he occupy the place of renowned consultant, or obscure practitioner, has it as his duty and function to gather the threads of information yielded by subjective and objective facts, and to weave therefrom a judgement for the best welfare of the individual or the community. To those familiar with the writings of Osler, its words struck home as the verification and logical conclusion of those immortal principles laid down for younger aspirants in such addresses as "Internal medicine as a Vocation", which are here formulated with new freshness for a later generation. But, in the vast extension of our knowledge to-day, and in the added complexity of our problems from the introduction of innumerable new methods of investigation, in the shifting of the modern standpoint from that of therapeusis to prevention of disease, and the substitution of the ideals of the New Physiology, the initial task of the physician remains the same, the personal observation and experience of the master mind stands not less but more than formerly as the one thing

supremely essential, relegating "Department store medicine" to a proper subordination, and claiming, by a selective choice, the service of the infinitely wider range of methods and resources that the present holds. The standard of medical opinion is to be recognized as that not of abstract truth, but of fidelity to fact and of loyalty to the best interests of the patient, and the relativity of the concept normal to the age, sex, environment, and other correlated facts in the life of every individual, with the varying importance of slight deviations from the normal under slightly varying circumstances, must be established. The fruits of a wide personal experience were embodied in these and many other clear cut definitions and wise generalizations which imparted their own direct stimulus.

Dr. Janeway closed a truly inspiring address by a reference to America's adoption of the cause of the Allies, that touched a vibrating chord, as shown in the tenser silence that greeted it, and the insistent applause that followed: "You of the Canadian profession have borne the burden and heat of the day, with a nobility to which no words of mine can pay a fitting tribute. Accept my inarticulate homage. May *we* not fail to meet the test, and, shoulder to shoulder with you, ensure that victory of justice and mercy which alone can bring an enduring peace!"

A CANADIAN CAVENDISH LECTURER

IN extending to Captain Macphail an invitation to deliver the Cavendish Lecture, the West London Medico-Chirurgical Society has bestowed a high compliment upon one who is well known as a man of letters both in England and in Canada. It is an honour that has seldom fallen to the lot of a Canadian, Sir William Osler being the only medical man belonging to this country who had previously received the distinction.

To readers of this JOURNAL no comment need be made upon the literary ability of Captain Macphail. It would

seem, however, a fitting occasion to express the keen sense of loss, occasioned by Captain Macphail's absence on active service, felt by those who are endeavouring to carry on the JOURNAL without the assistance of the experience and wise judgement of its editor.

Selecting as the title of his lecture the simple phrase "A Day's Work", Captain Macphail gave a faithful and vivid description of the taking of Vimy Ridge, a day's work that Canadians will ever remember with pride. Particular reference was made to the part taken by the medical services, whose efficient and well-directed efforts made it possible to clear the field of wounded within the short space of three hours. Captain Macphail closed his address with a stirring plea for the continuance of the old British traditions as contrasted with the scientific relentlessness of the enemy, and a solemn warning against invidious efforts of theorists to change the internal polity of Britain.

SIR WILLIAM C. MACDONALD

IN the death of Sir William Macdonald, which occurred at Montreal on Saturday, June 9th, 1917, McGill University has lost its Chancellor and a most generous benefactor and friend. A familiar figure has gone from the precints of the University and an influence that was constantly working for the progress and welfare of every department has been taken away. The magnificent buildings which owe their existence to one whose pleasure it was to wander amongst them, remain, however, as a lasting memorial to his generosity and a tangible sign of his interest in the cause of education. Quiet and unassuming in manner, even austere in his mode of living, Sir William will be remembered as one of the greatest patrons of education in Canada. A direct descendant of the chieftains of a gallant clan that formed part of the small, devoted band that made a last stand by the shores of dark Loch Shiell in defence of Bonnie Prince

Charlie, William Christopher Macdonald was born in Prince Edward Island at Glenaladale, in the year 1831. He was the youngest son of the late Hon. Donald Macdonald, at one time president of the Legislative Council of Prince Edward Island, and grandson of the eighth Chief of the Clan Macdonald of Glenaladale in the Highlands of Scotland. His business career was commenced in Montreal as an importer and general commission merchant. He soon realized, however, the possibilities of a large tobacco business in Montreal and it was in this that he made the millions that later were given so generously to McGill University and to Macdonald College. Upon the death of Lord Strathcona, in 1914, Sir William was made Chancellor of the University. Among his gifts to McGill were the Engineering Building, which was burnt down and rebuilt, the Macdonald Physics Building, the Chemistry and Mining Buildings, the McGill Union, the Macdonald Park at the foot of the Mountain, and the Stadium—one of his most recent gifts; and, in addition, large sums of money for the endowment of various chairs and for equipment and other purposes. In New Brunswick, Nova Scotia, and Prince Edward Island, Sir William established the Macdonald Consolidated Schools as a means of improving education in rural districts, and in order to foster interest in agriculture he built Macdonald College, that magnificent pile of buildings at Ste. Anne de Bellevue on the banks of the Ottawa River. He was knighted in 1898. Among the bequests made by Sir William Macdonald was a gift of five hundred thousand dollars to the Faculty of Medicine of McGill University, an equal amount to the Montreal General Hospital, and the sum of one hundred thousand dollars to the Maternity Hospital. Although he came of an old Jacobite family, Sir William left the Roman Catholic Church as a young man. He never joined any other religious body. His remains were cremated in the beautiful crematorium in Mount Royal cemetery, which was built and endowed by him some years ago.

UNDER the direction of Major J. W. S. McCullough, in Hamilton, the first week of June was devoted to acquiring information relative to the care and feeding of infants, the health of the mother and the attention she received at the time of the infant's birth, the financial condition of the parents, and other points bearing on the possible causes of infant mortality. The information will be tabulated for future reference in connexion with the baby welfare movement. It is well to remember that in Canada 102 babies out of every thousand that are born die within twelve months of birth.

THE following resolution was recently published by the medical authorities of Scotland: "The faculties of medicine of the universities and councils of the Royal College of Surgeons of Edinburgh and of the Royal Faculty of Physicians and Surgeons of Glasgow desire to record their condemnation and detestation of the neglect and inhumanity which characterized the conduct of certain members of the Prussian medical staff to whom the treatment of British prisoners of war was intrusted, especially in the internment camps at Wittenberg and Cardlegen during outbreaks of typhus fever which had been largely provoked by overcrowding, insufficent food, and the entire absence of all sanitary measures. The facts as stated in the recent report of a British government committee, which are based mainly on the testimony of officers of the Royal Army Medical Corps, themselves prisoners of war, are of such a nature as to bring indelible disgrace upon the physicians concerned, and upon the German government, which remains ultimately responsible for the treatment meted out to prisoners of war. As members of a profession which has hitherto, in every quarter of the civilized world, been inaccessible to the shameful influences which make for barbarity in warfare, we are reluctantly forced to the conclusion that a spirit of gross inhumanity has not been absent from the Prussian medical service."

Miscellany

Book Reviews

THE NEWER METHODS OF BLOOD AND URINE CHEMISTRY. By R. B. H. GRADWOHL, M.D., director of the Pasteur Institute of St. Louis; and A. J. BLAIVAS, assistant in the same. 226 pages with sixty-five illustrations and four colour plates. Publishers: C. V. Mosby Company, St. Louis, 1917. Price, $2.50.

THIS little book of laboratory directions is what is needed by many of our hospital laboratories which are just starting the newer quantitative methods of blood and urine analysis. It collects together in an easy way, what is very often a difficult task, the practical methods for the estimation of the different blood constituents, the majority of which are now beginning to assume a more fixed and definite form. The illustrations in the book, too, are very helpful. We must, however, confess ourselves surprised at the strong advocacy of the Hellige colorimeter as against the Duboscq. Work in this field must be accurate, if the diagnosis or prognosis is to be of value, and the highest accuracy is not too much. Part III of the book is especially valuable as it is in the interpretation of his results that the beginner finds most difficulty. The references to the literature, too, should encourage the reading of the original articles, as no set of directions has yet been given for any analytical process which can be followed entirely mechanically, and an intelligent appreciation of the difficulties can only be obtained by observing the spirit as well as the letter of the instructions. This can usually be found in the original paper.

THE following candidates successfully passed the recent examinations of the Medical Council of Canada, held at Toronto during the week commencing June 19th: C. C. Birchard, M. F. Congdon, E. Couture, A. B. Holmes, I. R. McKendry, and I. A. Young.

Obituary

CAPTAIN ROBERT HOME, R.A.M.C.

Captain Robert Home, R.A.M.C., was killed in action in France on April 22nd. He was twenty-six years of age and a graduate in medicine of the University of Toronto. At the time he enlisted he had been in practice for about three years in Toronto and had already given promise of a brilliant future. In October, 1915, he joined the Seventeenth Field Ambulance, C.E.F., and with that unit went to England where he was transferred to the R.A.M.C. Captain Home returned to Canada on a short furlough last November and the following month went back to France. Dr. Home was a demonstrator in anatomy in the University of Toronto and was also on the staff of the Toronto General and the Grace Hospitals.

HAMILTON WRIGHT, M.D.

In the death of Hamilton Wright, which occurred recently at Washington, McGill has lost another son of whom she is justly proud. A Canadian by birth and education, Dr. Wright's professional career, although largely spent away from Canada, was begun under the inspiration of Professor J. J. Adami, of McGill University. After graduating in 1895, he entered the University of Cambridge as a John Lucas Walker scholar and devoted himself to the study of neuropathology. He then returned to McGill University and conducted a series of studies on the spinal cord under the direction of Professor Adami. Subsequently Dr. Wright became assistant to Dr. F. W. Mott, at the Pathological Laboratory, Claybury. There he worked at the pathology of tabes and made a number of experiments on animals with the view of demonstrating chromatolytic changes in the ganglion cells of the brain by prolonged chloroform narcosis. Later on Dr. Wright was appointed by the Colonial Office to conduct an investigation into beri-beri in the Straits Settlements. While engaged in this work, he was able to induce the authorities to build the admirably equipped laboratory at Kuala Lumpur. His researches led him to the conclusion that the disease was probably due to some microörganismal toxin and that food,

including rice, was merely a mode of transmission of the infective agent. In 1909, Hamilton Wright was appointed by President Roosevelt to the International Opium Commission. He was an able scientist, possessed of marked administrative ability and a facile gift of expression. His death was the sequel to injuries received in a motor-car accident in France, where he was engaged in relief work. A widow and five children survive him.

JAMES RUSSELL, M.D.

Dr. James Russell, who died at Hamilton on May 31st, was born in Lanarkshire, Scotland, in the year 1843. For more than twenty years he was superintendent of the Hamilton Asylum, a post for which his experience and administrative ability made him eminently fitted. As an alienist Dr. Russell enjoyed a wide reputation. He was a member, and at one time president, of the American Medico-Psychological Society, and for six years a member of the Ontario Medical Council, being elected to that body in 1885. It was as a boy of thirteen that James Russell first came to Canada and settled with his parents at Hay, in the Province of Ontario. After attending the public schools at Hay for some years, he entered the Normal School at Toronto, where he graduated with honours. He then taught for two years but devoted his spare time to the study of medicine. He entered the New York College of Physicians and Surgeons and finished his medical course at Toronto University, where he obtained his M.D. degree in 1869. The following years were spent in general practice in Hamilton and in August, 1869, Dr. Russell was appointed superintendent of the Asylum. He leaves a widow and grown up family. A daughter, Miss Elizabeth Russell, who is now matron of the Duchess of Connaught Canadian Red Cross Hospital, was recently awarded the Royal Red Cross of the First Class by His Majesty the King.

Dr. Willard D. Sorensen, who died at Leavitt, Alberta, on May 3rd, was the eldest son of Mr. and Mrs. Willard Sorensen, of Cardson, Alberta. He was a graduate of the medical school of Western University and was in practice at Edgerton, Alberta. His death followed an operation for appendicitis. A widow and young child survive him.

Dr. S. H. Goodwin, whose death occurred in Detroit on May 15th, was born at South Oxford, Ontario, in 1849.

DR. WESTON WILLIAM MILBURN, of Macleod, Alberta, who died on May 26th, was a graduate of Trinity Medical College, Toronto, of the year 1903. He was well known as a practitioner in Milburn and the surrounding district.

DR. PARKER PEACOCK, a graduate of the University of Toronto, was accidentally killed at Calgary on May 7th, while in a motor car driven by his brother Lieutenant-Colonel M. B. Peacock. The automobile was struck by a street car.

DR. JAMES RUTHERFORD, of Orono, Ontario, died May 14th. He was a graduate of Queen's University of the year 1870.

News

ONTARIO

DR. EDWARD THOMAS HOIDSE, of Toronto, has been made a member of the Royal College of Surgeons.

IN response to a request from the Ontario Association for the Feebleminded, a meeting was held in Hamilton on May 16th, at which the following resolution was passed: That in the opinion of this meeting of representative citizens, it is advisable, and in the best interests of the city, that a local branch of the Provincial Association for the Care of the Feebleminded be formed; and that a committee for that purpose be forthwith nominated.

ONE hundred and forty cases of typhoid fever, two of which ended fatally, were reported in Orillia during a period of three weeks. Investigation revealed the fact that the epidemic had been caused by infection transmitted by milk supplied from a farm where several cases of the illness had occurred.

THE Hospital at Wingham at is to be enlarged.

CAPTAIN J. H. ELLIOTT, M.D., C.A.M.C., of Toronto, has been elected president of the American Climatological and Clinical Association.

QUEBEC

DR. TANNEY, of Montreal, has been appointed medical superintendent of the General Hospital. Dr. Tanney is a graduate of McGill University.

MANITOBA

THE plans are in course of preparation for an addition to the King Edward Hospital at Winnipeg.

MANITOBA

DR. LYLE JOHN CAMERON, of Winnipeg, has been created a Fellow of the Royal College of Surgeons.

DR. JOHN MCDIARMID, of Brandon, has been appointed physician to the jail in succession to Dr. Clark.

MEDICAL COLLEGES

Toronto University.

THE distinction of Knight Commander of the Order of St. Michael and St. George has been conferred by His Majesty King George upon Robert Alexander Falconer, President of the University of Toronto.

THE following fourth-year medical students have joined the British Navy as sub-surgeons: W. E. Johnston, of Toronto; H. S. Little, of Ridgetown; H. I Palmer, son of Colonel R. H. Palmer, M.D., of Brantford, and H. I. Quinn, of Castleton.

Laval University

THE degree of M.D. has been conferred by Laval University, Quebec, upon the following candidates who were successful in passing the recent examinations: Rosario Poitras, of St. John; Jean Deschaillons, G. Talbot, of Quebec; Paul Marceau, of Quebec; J. J. Roy, of St. Anselme; Ludovic Lavallée, of St. Anne de la Pocatière; Camille Lavoie, of St. Joseph d'Alma; and Eugene Guillemette, of Lawrence, Massachusetts.

Western University

THE following is the list of candidates who were successful in passing the medical examinations at Western University, and upon whom the degree of M.D. has been conferred: F. J. H. Campbell, B.A., London, gold medalist; H. O. Foucar, son of a missionary in China, silver medalist; E. N. Ballantyne, W. L. Denny, J. A. Renwick and J. M. Young, London; D. D. Ferguson, C. J. A. McKillop and F. H. Nelson, St. Thomas; L. M. Jones, Chesley; A. J. McKay, Woodstock; R. S. Murray, Galt, and C. J. Shore, Glanworth.

ARMY MEDICAL SERVICES

AMONG recipients of the King's birthday honours are two members of the Canadian medical services: Surgeon-General Fiset, the Deputy Minister of Militia, who is made Knight Bachelor, and Colonel Charles Alfred Hodgetts, who is given the distinction of Commander of St. Michael and St. George. During the past three years Sir Eugene Fiset has thrown himself heart and soul into the work of directing the mobilization and equipment of the overseas forces. Colonel Hodgetts, as is well known, is the Director of the Canadian Red Cross overseas.

THE Distinguished Service Order has been awarded to Lieutenant-Colonel D. McQueen, formerly medical superintendent of the Winnipeg General Hospital and Commanding Officer of the 11th Western Field Ambulance, C.E.F., and to Captain Hymen Lightstone, R.A.M.C., of Montreal. Captain Lightstone received the medal of honour from the French Government a few months ago.

THE President of France has conferred upon Colonel E. A. Lebel, officer commanding No. 8 Canadian General Hospital, now stationed at St. Cloud, the decoration of *Chevalier de la Légion d'honneur*. Captains Parizeau, Petitclerc and Saint Pierre are made *officers de l'instruction publique*, and Captains Lafleur, Forgues, Millette, Roy, Bourgeault, and Clerck *officiers d'académie*. The *médaille de vermeil des épidémies* has been awarded to Miss Decormier.

THE Silver Medal for Military Valour has been awarded by His Majesty the King of Italy to Captain Howard Hampton Burnham, C.A.M.C.

THE Military Cross has been awarded to Captain Frank L. McKinnon, B.A., M.D., of Winnipeg, and to Captain Frank M. Walker, M.D., of Stony Creek, Ontario, for conspicuous bravery shown in the carrying out of duties in connexion with the Royal Army Medical Corps.

THE following members of the Canadian Army Medical Corps were mentioned in despatches by General Sir Douglas Haig at the beginning of June: Colonel J. T. Fotheringham; Lieutenant-Colonels K. Cameron, J. M. Elder, C. F. McGuffin, J. D. McQueen, G. R. Philp, C. F. Wylde; Majors A. T. Bazin, P. G. Bell, C. H. Dickson, A. L. Gilday, G. S. Mothersill, G. H. Wilson; Captains T. H. Bell, H. Buck, J. C. Clarke, A. W. Ellis, D. B. Kennedy, C. Kerr, A. F. Laird, W. G. Lyall, A. McCausland, R. R. McClenahan, H. R. Mustard; Sergeant-Majors Gardner and Pearson; Sergeants F. Baxter, S. H. Bye, C. Hay, G. H. Iliffe, W. G. Neish; and Corporals E. Miller and T. W. Whitefoot. *Nursing Service:* Miss M. E. McIntosh, Miss B. O. Maguire, and Miss M. E. Stevens.

THE names of the following members of the Canadian Red Cross were also mentioned by Sir Douglas Haig: Miss M. I. Burns, Miss M. MacFarlane, and Miss B. M. MacIntosh.

THE Bronze medal for military valour has been awarded to Private William Bateman, C.A.M.C.

THE Royal Red Cross of the First Class has been awarded to Nursing Sisters Anne Forest and Jean Matheson; this decoration, of the second class, has been awarded to Sisters Louise Brock, Harriet Graham, Laura Gamble, Mabelle Jamieson, Kathleen Little, Lizzie MacEachern, Georgianna McCullough and Mary Morrison.

DISTINGUISHED Conduct and Meritorious Service Medals have been awarded to the following non-commissioned officers and men: Sergeant D. G. Bell, Sergeant-Major G. P. Blanchard, Sergeant W. A. Cooper, Corporal W. Danby, Private A. B. Davies, Corporal J. Evans, Sergeant C. N. Foster, Corporal J. Giles, Corporal T. H. Goodeve, Sergeant-Major P. V. Harcourt, Sergeant L. B. Hughes, Corporal A. J. Langford, Sergeants L. M. Larsen, P. B. Legg and N. V. Levy, Sergeant-Major R. B. Lloyd, Sergeant-Major P. W.

Macfarlane, Bombardier P. W. MacNevin, Sergeant-Major F. J. Marshall, Sergeant D. McAndie, Sergeant-Majors E. Nicholls and J. Patterson, Sergeant J. Paul, Corporal P. Quinn, Sergeants G. W. Simms and W. J. Squibb, Private G. Tomlinson, Sergeant-Majors W. Vagg and W. Wallis, Private J. Wilson, Sergeant C. F. Airey, Drivers C. S. Althouse and A. Blatchford, Sergeants G. L. Brody, J. J. Coull, W. Davidson, J. A. Hunting, E. S. Keeling, J. Lamb, McL. Norton and A. G. Ovenden, Corporal J. J. Quittenton, Sergeants Smallman and R. Snelson, Sergeant-Major O. O. Wilson, Private S. C. Wise.

THE appointment is announced of Major Thomas Dickson Archibald, C.A.M.C., of Cobourg, Ontario, as chief medical officer of the Whitby Military Hospital, in succession to Lieutenant V. Storey, who has been transferred to the Spadina Military Hospital, Toronto. Major Archibald went overseas with the 8th Canadian Mounted Rifles and returned to Canada last February.

LIEUTENANT-COLONEL H. ERNEST KENDALL, C.A.M.C., of Sydney, Nova Scotia, is now in command of the St. Francis Xavier Hospital, which is stationed at Bramshott.

LIEUTENANT-COLONEL A. J. MACKENZIE, C.A.M.C., of Toronto, has been transferred from the Moore Barracks Hospital at Shorncliffe to take command of the Princess Patricia's Red Cross Hospital at London.

LIEUTENANT-COLONEL ARTHUR WINTERS has been appointed A.D.M.S. of the Quebec Military District. Lieutenant-Colonel Winters was formerly in practice at Toronto and at the time of the outbreak of the war, was engaged in post-graduate work in England.

PROMOTIONS in the Canadian Army Medical Corps: to be Lieutenant-Colonel, Major P. G. Bell, of Winnipeg.

THE following doctors are among those who have recently joined the C.A.M.C.: Dr. G. W. Gibbs, of Selkirk, and Dr. W. O. Henry, of Brandon, Manitoba; Dr. W. Lemesurier, of Quebec; Dr. J. A. Bell, of London, Ontario.

LIEUTENANT-COLONEL GEORGE R. PHILP, C.A.M.A., of

Toronto, has been appointed A.D.M.S. at Petawawa Camp. Lieutenant-Colonel Philp has been in command of the 10th Field Ambulance, C.E.F. He was recently mentioned in despatches by Sir Douglas Haig.

Dr. J. W. McIntosh, member of tthe Legislature of British Columbia, has left Vancouver for London to join the Royal Army Medical Corps.

Dr. J. H. Carson, of Vancouver, has accepted the appointment of medical superintendent of the Langara Convalescent Hospital, with the military rank of Captain.

CASUALTIES.

Wounded

Captain Bernard McCullough, C.A.M.C., of Oshawa, Ontario.

Captain H. C. Wallace, C.A.M.C.

Captain Arthur Chester Armstrong, C.A.M.C., of Alexander, Manitoba.

Captain K. G. Macdonald, C.A.M.C., of Toronto.

Captain W. T. Ruggles, C.A.M.C., of Middleton, Nova Scotia.

Canadian Literature

Original Contributions

The Canadian Journal of Medicine and Surgery, April, 1917:

Certain diseases of the skin in regard to the public health . . . . . D. King Smith.

The Canadian Practitioner and Review, April, 1917:

Hydatid of the lung—Report of two cases . . . . . F. Arnold Clarkson.

The radium treatment of malignant disease of the lip and skin . . . W. H. B. Aikins.

Medical Societies

MEDICAL COUNCIL OF CANADA

THE fifth annual session of the Medical Council of Canada was held at Ottawa on June 12th and 13th, 1917, under the presidency of Dr. Walter W. White, of St. John, New Brunswick.

There were present: Sir Thomas Roddick, Dr. E. A. Braithwaite and A. MacG. Young, representing the Governor-in-Council; Dr. C. K. Clark, Toronto University; Dr. E. P. Lachapelle, Laval University, Montreal; Dr. A. D. Blackader, McGill University, Montreal; Dr. H. A. McCallum, Western University; Dr. E. S. Popham, Manitoba University; Dr. P. C. Dagneau, Laval University, Quebec; Dr. D. Fraser Harris, Dalhousie University; Dr. J. C. Connell, Queen's University; from Ontario: Drs. W. Spankie and H. S. Griffin; from Quebec, Drs. A. Simard and L. P. Normand; from New Brunswick, Drs. W. W. White and G. C. VanWart; from Prince Edward Island, Drs. A. MacNeill and P. Conroy; from Manitoba, Hon. Dr. Thornton and W. Rogers; from Saskatchewan, Drs. W. J. S. Millar and H. E. Eaglesham; from Alberta, Hon. Dr. Brett and F. W. Crang; from British Columbia, Drs. R. E. Walker and R. E. McKechnie; representing the Homœopathic Body in Canada, Drs. E. M. Morgan, C. E. Sugden and C. E. Jarvis.

A resolution was passed expressive of the regret of Council at the death of the late Dr. J. S. Gray of Winnipeg, one of the original members of Council.

The President then addressed the Council *viva voce* and touched upon certain matters of importance in reference to the Council and to the profession at large.

The Registrar's report showed that since the 1916 meeting of Council he had registered thirty-six men under the ten year clause in the Act. He also reported in detail upon the examinations conducted by Council in Toronto in June, 1916, and in Montreal in October, 1916, showing that a total of thirty-five had successfully passed in the two examinations and had been duly included in the Canada Medical Register. His report concluded with the auditor's statement of the receipts and expenditures for the year closing March 31st, 1917.

An important request was received from the Deputy Minister

of Militia requesting the Council to assist the Department by reporting on certain questions submitted concerning the supply of medical practitioners for the war from each province, whether particular localities were being denuded of medical men to the detriment or prejudice of the public living therein, and also as to the work of training medical men in the various medical schools, hospitals and public health services. A committee consisting of Drs. A. MacNeill, D. F. Harris, G. C. VanWart, A. Simard, J. C. Connell, C. E. Sugden, Hon. Dr. Brett, A. MacG. Young and R. E. Walker was appointed by the president to consider and report upon the request of the Deputy Minister, its work to be continued after the adjournment of Council. This committee subsequently met and elected Dr. J. C. Connell as chairman.

A detailed report was received from a committee of the Board of Examiners suggesting certain alterations tending to improve the existing regulations. It was favourably received and acted upon.

Two important resolutions were submitted; one upon the question of instituting a scholarship, and the other upon appointing a committee to inspect and report upon the various medical schools in Canada. These were ordered referred to the Council's solicitor and General Council.

The Education Committee reported that an examination be ordered to be held at Montreal and Halifax on the second Tuesday in October, 1917, and at Toronto and Winnipeg coincidently on the third Tuesday in June, 1918. The report was adopted.

The Executive Committee also presented in detail a nomination for the Constitution of the Board of Examiners for the October Examinations, 1917, and for the June Examinations of 1918. The nomination was accepted and passed.

The Finance Committee presented a detailed report written upon the operations of the Council, which was received and adopted.

It was moved by Dr. McKechnie, seconded by Dr. Connell, and carried: That a special committee consisting of Hon. Dr. Thornton, Dr. P. C. Dagneau, Dr. J. C. Connell and Dr. C. E. Jarvis be authorized to enter into negotiations with the Provincial Councils for coöperation in conducting examinations and for the purpose of establishing the examinations of this Council as the single portal for qualification in the Dominion of Canada.

The question of dividing the examinations of the Council into Primary and Final so that undergraduates could take the primaries when certificated from their Alma Mater that they had successfully passed in the subjects in their respective schools, was referred to the

special committee consisting of Drs. Thornton, Dagneau, Connell, and Jarvis. The whole question of reciprocity was referred for report to the same committee.

The nominating committee presented its report, as follows: hon. president, Sir T. Roddick; president, Dr. E. P. Lachapelle; vice-president, Dr. R. Eden Walker; registrar, Dr. R. W. Powell; general counsel, Mr. F. H. Chrysler, K.C.; auditor, Mr. G. L. Blatch, F.C.A. The report was adopted. The retiring president, Dr. W. W. White, inducted Dr. E. P. Lachapelle in the chair.

MEDICAL LIBRARY ASSOCIATION MEETING

THE twentieth annual meeting of the Medical Library Association was held in New York on June 4th and 5th, and in Brooklyn on June 6th. Representatives from the libraries of the following institutions were present: Cleveland Medical Society, College of Physicians and Surgeons of New York, College of Physicians and Surgeons of Philadelphia, Denver Medical Society, Harvard Medical Society, Jefferson Medical College, Johns Hopkins Hospital, Luzerne County Medical Society, Medical Faculty of McGill University, Medical and Chirurgical Faculty of Maryland, Department of Health of New York City, Medical Department of New York State Library, New York Academy of Medicine, Rockefeller Foundation, Rockefeller Institute, Rush Medical College, Medical School of Syracuse University, Toronto Academy of Medicine, Medical School of the University of Georgia, Wayne County Medical Society,

The papers read, all of which were exceedingly practical and of equal interest to the practioner and the librarian, placed before the association various ways and means in which libraries can be of the greatest benefit to the greatest number. In a paper entitled, "The pamphlet as a library tool," it was shown in how many ways the pamphlet might be of value—its utility lying largely in its smallness of size, as a greater mass of material in such form can more easily be circulated than the same amount of literature found only in a bound periodicals.

With regard to the use of the photastat in libraries, it was pointed out that with no risk of damage to the original work, rare and valuable volumes, which otherwise could not be consulted outside the library, were thus made available.

The paper on "War bibliography" was of particular interest. The subject headings under which it is suggested to collect material

should prove of great assistance in rendering information easily accessible. Such a bibliography would be of great practical value and it should become generally known among medical men, especially those on active service, that such articles are being tabulated, or in some other way brought together.

ONTARIO MEDICAL ASSOCIATION

THE thirty-seventh annual meeting of the Ontario Medical Association was held in the Mining Building, University of Toronto, on May 30th, 31st, and June 1st, 1917. The committee of general purposes met on the evening preceding (May 29th) and discussed fully the proposed by-laws and constitution. At 10 a.m. the president, Dr. A. Dalton Smith, took the chair at the business session. After the reading of the minutes, the following reports were received and adopted: Treasurer, Secretary, Arrangements, Papers and Business, Public Health, Necrology and Workmen's Compensation. The committee on by-laws, and the executive committee were to report at the next business session.

In the afternoon session, Dr. James J. King, of New York, presented a paper on the "Tonsillar infections as a source of systemic disease", and Dr. W. W. Chipman, of Montreal, read the Address in Gynæcology.

The following were elected on the nominating committee: Drs. Mullin, Bingham, Cleland, Anderson, Cameron, Clarkson, Lusk, McGregor, Ferguson, Powell, Goldie, Rogers, Morton, Parry, Middleborough, Dalton Smith, Argue.

At 5 p.m. a short business session was held, the president in the chair. Dr. G. S. Cameron presented the report of the committee on by-laws. It was moved by Dr. Cameron and seconded by Dr. Anderson that the committee be requested to continue their work and to bring in a report at the annual meeting of 1918. Moved in amendment by Dr. Mullin and seconded by Dr. Marlow, that the committee continue their work, and that a special meeting of the Association be called on or before November 1st, to pass upon the provisional constitution. This amendment was carried.

At the evening session, the president, Dr. A. Dalton Smith, presented his address, and Dr. Henry A. Christian, Boston, delivered the Address in Medicine.

The morning of Thursday was devoted to the meetings of sections. At the afternoon session, Dr. W. W. Babcock, of Phila-

delphia, delivered the Address in Surgery, and Dr. J. E. McKenty, read a paper on "Laryngectomy."

At the business session the nominating committee reported as follows: Next place of meeting, Hamilton; president, John P. Morton; 1st vice-president, Dr. G. Stewart Cameron; 2nd vice-president, Dr. John Ferguson; 3rd vice-president, Dr. J. M. Rogers; 4th vice-president, Dr. J. F. Argue; general secretary, Dr. E. Arnold Clarkson; assistant secretary, Dr. F. C. Harrison; treasurer, Dr. J. H. Elliott; executive committee, Drs. John Sheahan and N. H. Beal; representatives to the Canadian Medical Association, Drs. H. B. Anderson, D. J. Gibb Wishart, R. J. Hamilton.

The following were added to the committee: credentials, J. R. Parry, Geo. A. Shannon; public health, H. W. Hill, A. J. McCauley, J. W. S. McCullough; publication, E. E. King, G. W. Elliott, John Ferguson; ethics, W. H. B. Aikins, P. L. Scott.

The treasurer's report and the report of the executive were then received and adopted.

A resolution was moved by Dr. Morton, seconded by Dr. Campbell, and carried, that the Ontario Government appoint a Royal Commission to make inquiry into the subject of the care of the feeble-minded and insane in the Province of Ontario to the end that more adequate means may be adopted for dealing with the problem of prevention and of scientific treatment of the insane and feeble-minded.

It was moved by Dr. King and seconded by Dr. Hamilton, that the president appoint a committee to deal with the question of venereal diseases. This was also carried. Subsequently the president named Drs. E. E. King (convener), Charles Hair, H. J. Hamilton, A. Dalton Smith, R. S. Hutchison, J. G. Fitzgerald, R. W. Mann, J. F. Morton, G. S. Cameron and E. R. Secord as members of this committee.

The president then installed the president-elect, Dr. J. P. Morton, of Hamilton.

At 4.30 the president and Mrs. A. Dalton Smith held a reception in the Academy of Medicine.

At the evening session, two papers were presented, one by Dr. Nelson, and one by Professor Sharpe, of New York. Friday morning was devoted to meetings of sections.

ONTARIO HEALTH OFFICERS' ASSOCIATION

THE Ontario Health Officers' Association held its sixth annual meeting in the Medical Building of the University of Toronto on

Tuesday and Wednesday, May 29th and 30th. The attendance was upwards of 300. The meeting was held as a general session during the first day and upon the second day was divided into a general session and one upon public health administration. Dr. A. J. Macaulay, M.O.H., of Brockville, made an ideal presiding officer. Suitable reference was made to the death of the late vice-president, Dr. Vardon, of Galt.

The first session included a discussion on "Venereal Diseases", the paper, with slides, being given by Dr. Gordon Bates, of Toronto. The discussion was carried on by Drs. C. H. Hair, C. E. Trow and others. The subject of "Infantile paralysis" was presented by Dr. H. W. Hill, M.O.H., of London, who gave a most instructive paper upon this subject. Papers upon the same subject were given by Drs. Durocher and Cruickshank, of Windsor, and by Dr. Green, of Stoney Creek. There was a free discussion led by Dr. Amys, M.O.H., of Peterborough.

In the afternoon session, after a short address by the president, Dr. C. J. Hastings gave on behalf of the Mayor an address of welcome. This was succeeded by the address of the day given by Professor C. E. A. Winslow, head of the Public Health Department, Yale School of Medicine, New Haven, upon the subject of "Safeguarding the health of young children". Professor Winslow's address gave a description of some practical methods of life-saving. He pointed out that the campaign carried on in New York had reduced the infant mortality rate in that city, from 154 in 1900 to 93 in 1916, which means a saving of over 8000 lives a year. Recent estimates of the comparative value of various lines of public endeavour showed that infant welfare work offers one fifth of the total possibilities of life-saving which are open to the health department.

Professor Winslow pointed out that every community of ten thousand inhabitants should have not a "milk station" merely but a baby's clinic and dispensary where children may be brought for weekly examination and from which public health nurses may go out to carry instruction to the home of the individual mother. In larger cities there should be such a station for every twenty thousand population. The nurses should also undertake the prenatal care of mothers. The experience of Boston had shown that such care may result in cutting the infant mortality to one half the figure prevailing among families not receiving prenatal advice. For the rural communities there should be public health nurses backed by available competent pediatric knowledge which might

be secured by coöperation with the infant welfare organization of the nearest city (*or with that of the Provincial Board of Health*).

Professor Winslow went on to say that the deaths of infants were due principally to three great groups of causes: (1) Prematurity or congenital debility and other causes operating at the time of birth; (2) Gastro-intestinal infections; (3) Pneumonia and other respiratory diseases. The machinery of the infant welfare station helped in dealing with all of these groups and more especially with the second, namely, summer diarrhœas and other digestive disorders. Means of procuring adequate and safe milk supplies were indicated in the paper and the value of inspection and pasteurization pointed out. The importance of measles and whooping-cough as public health problems were discussed, especially in the very earliest years. The fatality of whooping-cough is five times as great under one year as over five years, of scarlet fever ten times as great, and of measles twenty times as great. These facts indicate the great necessity for the protection of young children against infection. Schools should *never* be closed during epidemics. The services of the public health nurse should be secured and an examination of the school children made every morning for the detection of the disease in its earliest stages. Professor Winslow's paper is of the greatest value and should be read by every health officer.

The Hon. W. D. McPherson, provincial secretary, gave a short address of welcome to the members of the Association, in which he showed evidence of great interest in public health matters. His address was received with great enthusiasm.

Dr. Charles J. Hastings and Dr. J. F. Hanly each gave comprehensive addresses upon public health nursing.

Dr. F. D. Canfield read a paper on "The adrenals" and the chairman of the Provincial Board, Dr. Adam Wright, spoke upon "Rest and sleep as factors in disease prevention".

On the second day the morning session of the Association was carried on in two sections. The general session included papers upon "Sex hygiene" by Dr. N. W. Woods, and "Mendelism" by Dr. James Roberts. There were two splendid papers on the subject of "Tuberculosis", one by Dr. D. R. Craig and the other by Dr. A. R. Hanks. Dr. Jenner discussed "The public school as a place of instruction in practical sanitation".

In the section on Public Health Administration there were papers upon the "Difficulties of medical officers," by Drs. Macdonald, D. A. Kidd and F. H. Mitchell, on the "Education of the public," by Dr. H. Logan, upon the "Public Health Act,"

by Dr. A. Nichol, and upon the "Relationship of the District Officer to the M.O.H. of the municipality," by Dr. G. F. Richardson.

A most excellent paper upon "Ways and means of conducting public health in the average town" was given by Dr. C. A. Patterson, and one upon "Some practical points in enforcement of the regulations," by Dr. H. Ross. Dr. W. Doan, of Harrietsville, and Dr. F. King, of St. Catharines gave interesting papers upon their "Experiences as medical officers of health."

On the afternoon of this day the session was entirely taken up by papers on the subject of "Epidemiology". Measles, Scarlet Fever, and Diphtheria, were discussed by Drs. A. A. Metcalfe, J. C. Hutchinson and A. H. Speers. "Variola" was the subject of a paper by D. J. P. Boyle, while "Disinfection" was discussed by Drs. R. K. Anderson and James Campbell.

The matter of "Communicable diseases" was the subject of papers by Drs. J. H. Howell, W. R. Mason, and James McPotts, and Dr. S. F. Millen ably handled the question of "Typhoid fever in rural communities". All these matters led to general and wide discussion. Drs. Fitzgerald and McCullough answered the questions submitted in the "Question Drawer".

The officers and committees elected were as follows: president, Dr. H. W. Hill, M.O.H., London; 1st vice-president, Dr. G. F. Cruickshank, M.O.H., Windsor; 2nd vice-president, Dr. E. A. Williamson, M.O.H., Kingston; secretary, Dr. J. W. S. McCullough, Toronto.

The committee on papers and arrangements comprises Drs. G. A. Dickinson, J. J. Harper and J. W. S. McCullough.

HALIFAX MEDICAL SOCIETY

THE Halifax Medical Society held its annual meeting at the Nova Scotia Hospital, Dartmouth, on May 16th.

A report was received from the executive committee relating to the results of the meeting with the representatives of the government on the subject of grievances under the Workmen's Compensation Act. The deputation reported that certain reforms or amendments to the Act, which had been informally promised to be carried out, had not been; the committee in charge of this matter was continued and instructed to interview the government representatives again.

It was agreed to refer the matter of adopting the decimal

system in prescribing drugs to the meeting of the Nova Scotia Medical Society, which meets early in July in Halifax, under the presidency of Professor Fraser Harris.

The following officers were elected for next session: president, Major John Cameron, M.D., professor of anatomy, Dalhousie University; vice-president, Captain Lawlor, M.D., superintendent of the Nova Scotia Hospital; secretary-treasurer, Captain Hugh Schwartz.

Dr. Moore, of the Nova Scotia Hospital, demonstrated three cases of very early general paralysis in men. Captain Lawlor read an instructive paper on "General paralysis."

NORTH WATERLOO MEDICAL ASSOCIATION

THE annual meeting of the North Waterloo Medical Association was held at Kitchener, Ontario, on May 17th, Dr. W. G. Hilliard, of Waterloo, in the chair. The attendance was good and it was decided that the Association should be affiliated with the Ontario Medical Association. A paper on "Blood transfusion" was read by Dr. Callahan, and the history of a case of extra uterine pregnancy was given by Dr. H. M. Lackner. The election of officers for the year 1917–18 resulted as follows: president, Dr. F. H. Kalbfleisch; vice-president, Dr. F. H. Weidenheimer; secretary, Dr. J. E. Hett, of Kitchener; treasurer, Dr. T. H. Callahan.

PETERBOROUGH MEDICAL ASSOCIATION

THE annual meeting of the Peterborough Medical Association was held in the rooms of the association in the Public Library on April 26th.

A goodly number of the members were present, and after the presentation of the very satisfactory annual reports from the different committees, the following officers for the ensuing year were elected: Honorary president, Dr. Ford; president, Dr. Mann; first vice-president, Dr. Scott; second vice-president, Dr. Buchanan; secretary, Dr. Cameron, 318 Stewart Street; treasurer, Dr. McCulloch.

The report of the library committee showed that the society now owns several hundred books and is adding a number yearly through the setting aside of a certain amount of the annual income for the purchase of books.

Medical Societies

CANADIAN MEDICAL ASSOCIATION:—President—Dr. A. D. Blackader, Montreal. President-elect—Dr. James McKenty, Winnipeg. Secretary-treasurer—Dr. J. W. Scane, 836 University Street, Montreal.

ACADEMY OF MEDICINE, TORONTO:—President—Dr. D. J. Gibb Wishart. Secretary—Dr. J. H. Elliot, 11 Spadina Road. Treasurer—Dr. J. H. McConnell.

ALBERTA MEDICAL ASSOCIATION:—President—Dr. W. A. Lincoln, Calgary. Secretary-treasurer—Dr. D. G. Revell, University of Alberta, Edmonton South.
Annual Meeting, Calgary, 1917.

ASSOCIATION OF MEDICAL OFFICERS OF THE MILITIA:—President—Lt.-Colonel A. T. Shillington, A.M.C., Ottawa. Secretary—Captain T. H. Leggett, A.M.C., Ottawa.

ASSOCIATION OF MEDICAL OFFICERS OF NOVA SCOTIA—President—Dr. George E. DeWitt, Wolfville. Secretary—Dr. W. W. Hattie, Halifax.

BRANT COUNTY MEDICAL SOCIETY:—President—Dr. E. R. Secord, Brantford. Secretary—Dr. M. N. Faris.

BRITISH COLUMBIA MEDICAL ASSOCIATION:—President—Dr. J. Glen Campbell, Vancouver. Secretary—Dr. H. W. Riggs, Vancouver.

CALGARY MEDICAL SOCIETY:—President—Dr. J. L. Allen. Secretary—Dr. J. E. Aikenhead. Treasurer—Dr. W. Shipley.

CANADIAN ASSOCIATION FOR THE PREVENTION OF TUBERCULOSIS:—President—Hon. J. W. Daniel, M.D., St. John. Secretary—Dr. George D. Porter, Ottawa.
Annual meeting, September 26th, 1917.

CANADIAN HOSPITAL ASSOCIATION:—President—Dr. H. A. Boyce, Belleville. Secretary—Dr. J. M. E. Brown, Toronto.

CANADIAN PUBLIC HEALTH ASSOCIATION:—President—Dr. J. D. Pagé, Quebec. Secretary—Dr. J. G. Fitzgerald, University of Toronto.
Annual meeting, Ottawa, September 27th and 28th, 1917.

CENTRAL SOUTHERN ALBERTA MEDICAL SOCIETY:—President—Dr. J. S. Murray, Okotoks. Secretary-treasurer—Dr. G. E. Learmonth, High River.

COLCHESTER-HANTS MEDICAL SOCIETY:—President—Dr. J. W. T. Patton, Truro. Secretary—Dr. H. V. Kent, Truro.

EDMONTON ACADEMY OF MEDICINE:—President—Dr. C. U. Holmes. Secretary-treasurer—Dr. E. L. Garner. Library, 12 Credit Foncier Building.

ELGIN COUNTY MEDICAL ASSOCIATION:—President—Dr. G. A. Shannon, St. Thomas. Secretary-treasurer—Dr. W. F. Cornett, St. Thomas.

FRASER VALLEY MEDICAL SOCIETY:—President—Dr. DeWolfe Smith. Secretary—Dr. D. F. Carswell.

HALIDMAND COUNTY MEDICAL ASSOCIATION:—President—Dr. Hopkins, Dunnville. Secretary—Dr. Courley, Cayuga, Ont.